

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u
Edition : 16.12.88
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 401 846 850

Injection pump
Pump designation : PE6P110A32ORS3197
EP type number : 0 411 816 752
Governor
Governor design. : RQV300...1100PA232-3
Governor no. : 0 421 813 639

Customer-spec. information
Customer : VOLVO-BM

Engine : TD102

1st version kW : 196.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.40...1.60

2nd speed rpm : 350
travel mm : 1.70...2.30

3rd speed rpm : 700
travel mm : 4.40...5.00

4th speed rpm : 1165
travel mm : 8.70...8.90

5th speed rpm : 1255
travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.00
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 100
Minimum rack travel: 5.50
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 300
Rack travel in m: 10.80...10.90
3rd pressure hPa : 170
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 135.0...139.0
1000 s: (133.0...141.0)
Aneroid pressure h: -
Speed rpm : 700

A02

Del.quantity cm3/ : 118.5...121.5
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...190.0
1000 s: (146.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.90...4.10
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION
Loading machine

Note remarks

Combination no. : 0 401 846 855

Engine : TD122FK

TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

Phasing : 0-60-120-180-240-300

Tolerance \pm ° : 0.50 (0.75)

Time to cyl. no. : 1

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

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2nd speed      rpm : 250.0
Rack travel in mm : 4.6...4.8
Del.quantity   cm3/ : 1.7...2.2
               100 s: (1.4...2.5)
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Spread cm³ : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

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1st speed      rpm      : 250
travel mm      : 1.00...1.40
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2nd speed rpm : 450
travel mm : 3.60...4.20

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3rd speed rpm : 700
travel mm : 6.40...6.60
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4th speed rpm : 985
travel mm : 8.20...8.40

```
5th speed      rpm      : 1060
  travel mm    : 9.60...10.00
```

Control-Lever position
Degree: -1

Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

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1st version
Speed      rpm : 700
Aneroid pressure h: 900
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Del.quantity : 252.0...254.0
1000 : (249.0...247.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 13.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 5...13

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 890
Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...260.0
1000 s: (216.0...264.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 j 1
 Edition : 12.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 859
 Injection pump
 Pump designation : PE6P120A320RS3196Q
 EP type number : 0 411 826 776
 Governor
 Governor design. : RQV200...1100PA729-1
 Governor no. : 0 421 813 470

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.1...12.9)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 2.2...2.6

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 0.50...0.90

2nd speed rpm : 350

travel mm : 2.00...2.60

3rd speed rpm : 650

travel mm : 4.90...5.50

4th speed rpm : 1145

travel mm : 8.30...8.50

5th speed rpm : 1245

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 124.0...126.0

1000 : (121.0...129.0)

Spread cm3 : 5.00

1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 4...12

Testing:

Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 300...360

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del.quantity cm³/ : 138.0...146.0
1000 s: (136.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...380.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm
ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-12

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 d7
 Edition : 11.11.88
 Replaces : 7.3.88
 Test oil : ISO-4113

Combination no. : 0 401 846 873

Injection pump
 Pump designation : PE6P120A32ORS3183Y
 EP type number : 0 411 826 778
 Governor
 Governor design. : RQ250/1000PA832
 Governor no. : 0 421 801 368

Customer-spec. information
 Customer : DAF

Engine : WS 282

1st version kW : 282.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness : 6.00X1.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack trave: 8.30
Speed rpm : 250
Rack travel in mm : 6.60...7.00
Rack travel in mm : 2.00
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.70...13.80
2nd speed rpm : 1000
Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 520
Rack travel in m: 12.60...12.70
3rd pressure hPa : 280
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than

A08

full load rack tr: 12.40
Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...300.0
1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...7.00
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,9 e9
Edition : 09.12.88
Replaces : 7.3.88
Test oil : ISO-4113

Combination no. : 0 401 846 876

Injection pump
Pump designation : PE6P120A32ORS3183Z
EP type number : 0 411 826 777
Governor
Governor design. : RQV250...1000PA851-1
Governor no. : 0 421 813 605

Customer-spec. information
Customer : DAF

Engine : WS 225

1st version kW : 225.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.6...7.0
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.40...1.60
2nd speed rpm : 400
travel mm : 3.20...3.60
3rd speed rpm : 800
travel mm : 5.80...6.20
4th speed rpm : 1000
travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1025
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 199.0...201.0
1000 : (196.0...204.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 8.30
Speed rpm : 250
Rack travel in mm : 6.60...7.00

CONSTANT REGULATION
Speed rpm : 275...385

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 370
Rack travel in m: 11.70...11.80
3rd pressure hPa : 240
Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...300.0
1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...7.00
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 d9
Edition : 07.03.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 878

Injection pump
Pump designation : PE6P120A32ORS3183Z
EP type number : 0 411 826 777
Governor
Governor design. : RQ250/1000PA832-1
Governor no. : 0 421 801 387

Customer-spec. information
Customer : DAF

Engine : WS 225

1st version kW : 225.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.10

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 8.30
Speed rpm : 250
Rack travel in mm : 6.60...7.00
Rack travel in mm : 2.00
Speed rpm : 350...390

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 370

Rack travel in m: 11.70...11.80

3rd pressure hPa : 240

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...300.0
1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...7.00
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s10
Edition : 16.12.88
Replaces : 12.2.88
Test oil : ISO-4113

Combination no. : 0 401 846 881

Injection pump
Pump designation : PE6P110A320LS3835-1
EP type number : 0 411 816 755
Governor
Governor design. : RQV300..1050PA884
Governor no. : 0 421 813 685

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.6

Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)

Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.30

2nd speed rpm : 500
travel mm : 3.70...4.00

3rd speed rpm : 800
travel mm : 5.80...6.10

4th speed rpm : 1090
travel mm : 8.10...8.50

5th speed rpm : 1170
travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...128.0
1000 : (123.5...130.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 12.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26

Testing:
Speed rpm : 200
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION
Speed rpm : 300...550

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1050
Del.quantity cm3/ : 138.0...142.0
1000 s: (135.0...145.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:
APPLICATION :
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s11
Edition : 09.01.89
Replaces : 25.3.88
Test oil : ISO-4113

Combination no. : 0 401 846 889

Injection pump
Pump designation : PE6P110A32DLS3835-1
EP type number : 0 411 816 755
Governor
Governor design. : RQV300...900PA524-10
Governor no. : 0 421 813 549

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM 441

1st version kW : 150.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 8.7...8.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.4)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40
2nd speed rpm : 500
travel mm : 3.50...3.80
3rd speed rpm : 950
travel mm : 8.30...8.70
4th speed rpm : 1000
travel mm : 9.40...10.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 920
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del.quantity : 126.0...128.0
1000 : (123.5...130.5)

Spread cm³ : 4.00
1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.90
Speed rpm : 955...965
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 17...25

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 300...450

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 124.0...128.0
1000 s: (121.0...131.0)
Spread cm³ : 6.00
1000 s: (8.)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 955...965

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 f
 Edition : 09.01.89
 Replaces : 2.9.88
 Test oil : ISO-4113
 Combination no. : 0 401 846 891
 Injection pump
 Pump designation : PE6P12DA72ORS3216
 EP type number : 0 411 826 781
 Governor
 Governor design. : RQV300...975PA898K
 Governor no. : 0 421 815 197

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 2.4...3.0
 100 s: (2.1...3.3)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.60...2.00
 2nd speed rpm : 400
 travel mm : 3.20...4.00
 3rd speed rpm : 750
 travel mm : 6.70...7.10
 4th speed rpm : 975
 travel mm : 9.60...9.80
 5th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1015
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Aneroid pressure h: 1200

Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 53...61

Testing:

1st rack travel in: 12.10
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 11...19

Testing:

Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 280...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 13.10...13.20
2nd speed rpm : 830
Rack travel in m: 12.70...12.80
3rd speed rpm : 600
Rack travel in m: 11.80...12.10
4th speed rpm : 350
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 700

A18

Rack travel in m: 12.00...12.10
3rd pressure hPa : 400
Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 350
Del.quantity cm3/ : 169.0...175.0
1000 s: (166.0...178.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 111.0...113.0
1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...240.0
1000 s: (206.0...244.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 24.0...30.0
1000 s: (21.0...33.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,3 a
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 893

Injection pump
Pump designation : PE6P110A72ORS3220
EP type number : 0 411 816 760
Governor
Governor design. : RQV250...1000PA904
Governor no. : 0 421 813 722

Customer-spec. information
Customer : RVI

Engine : BS 16 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 12.9...13.2

100 s: (12.6...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 750
travel mm : 5.20...5.80

3rd speed rpm : 1000
travel mm : 7.40...7.60

4th speed rpm : 1350
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 129.0...132.0

1000 : (126.5...134.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever
position degrees: 62...70

Testing:
1st rack travel in: 12.20
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 250
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION
Speed rpm : 355...465

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 365
Rack travel in m: 12.90...13.00
3rd pressure hPa : 275
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 134.0...138.0
1000 s: (131.0...141.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)

BREAKAWAY

A20

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s14
Edition : 09.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 894
Injection pump
Pump designation : PE6P110A320LS3835
EP type number : 0 411 816 749
Governor
Governor design. : RQ300/950PA187-22
Governor no. : 0 421 801 440

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness -
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.8...13.0

100 s: (12.5...13.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)

Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.60...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 128.0...130.0

1000 : (125.5...132.5)

Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.8

Testing:

1st rack travel in: 11.50

Speed rpm : 990...1000

2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 123.0...127.0
1000 s: (120.0...130.0)
Spread cm3 : 6.00
1000 s: (9.)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (116.0...144.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s15
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 895
 Injection pump
 Pump designation : PE6P110A320LS3835
 EP type number : 0 411 816 749
 Governor
 Governor design. : RQV300...950PA884-3
 Governor no. : 0 421 813 706

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...8.9

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 3.80...4.00

3rd speed rpm : 800
 travel mm : 5.80...6.10

4th speed rpm : 1000
 travel mm : 8.30...8.70

5th speed rpm : 1075
 travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 975

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 126.0...128.0
1000 : (123.5...130.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 12.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack travel: 10.60
Speed rpm : 300
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION
Speed rpm : 300...450

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 119.0...122.0
1000 s: (116.0...125.0)
Spread cm3 : 6.00
1000 s: (9.)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.0

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.80...7.20
Rack travel in mm : 2.00
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm³/ : 138.0...142.0
1000 s: (135.0...145.0)
Spread cm³ : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 l 4
 Edition : 02.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 897
 Injection pump
 Pump designation : PE6P120A320LS3815-13
 EP type number : 0 411 826 782
 Governor
 Governor design. : RQ300/1050PA840-1
 Governor no. : 0 421 801 418

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 441 A

1st version kW : 191.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.30...12.50

Del.quantity cm3/ : 19.0...19.2
 100 s: (18.7...19.5)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.1...5.4
 Del.quantity cm3/ : 1.4...2.2
 100 s: (1.1...2.5)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 700
 Del.quantity : 190.0...192.0
 1000 : (187.0...195.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.10...5.40
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 1050
Rack travel in m: 11.70...11.90
3rd speed rpm : 700
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.30...12.50

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.30...10.50
2nd pressure hPa : 550
Rack travel in m: 11.90...12.10
3rd pressure hPa : 780
Rack travel in m: 12.40...12.50
4th pressure hPa : 1100
Rack travel in m: 12.70...12.90
5th pressure hPa : -
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm3/ : 184.0...187.0
1000 s: (181.0...190.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm3/ : 204.0...208.0
1000 s: (201.0...211.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 a
Edition : 09.01.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 898

Injection pump
Pump designation : PE6P120A32ORS3183-2
EP type number : 0 411 826 783
Governor
Governor design. : RQV250...1000PA851-3
Governor no. : 0 421 813 731

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 5.8...6.2
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60
2nd speed rpm : 400
travel mm : 2.70...3.10
3rd speed rpm : 800
travel mm : 4.80...5.20
4th speed rpm : 1200
travel mm : 7.90...8.10
5th speed rpm : 1500
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 151.0...153.0
1000 : (148.0...156.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.40
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 250
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 280...330

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.40...10.50

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 385
Rack travel in m: 10.30...10.40

START CUT-OUT

Speed 1/min : 170 (0)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...300.0
1000 s: (256.0...304.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 b
Edition : 09.01.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 899

Injection pump
Pump designation : PE6P120A320RS3183-2
EP type number : 0 411 826 783
Governor
Governor design. : RQ225/1200PA832-2
Governor no. : 0 421 801 465

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 5.8...6.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 151.0...153.0
1000 : (148.0...156.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 9.30
Speed rpm : 1235...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack trave: 7.10
Speed rpm : 225
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 375...415

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 10.40...10.50
2nd speed rpm : 1200
Rack travel in m: 10.30...10.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.40...10.50

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 385
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...300.0
1000 s: (256.0...304.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 e
Edition : 14.12.88
Replaces : 7.10.88
Test oil : ISO-4113

Combination no. : 0 401 848 708

Injection pump
Pump designation : PE8P110A320LS3802
EP type number : 0 411 818 705
Governor
Governor design. : RQ300/1150PA187-3
Governor no. : 0 421 801 133

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0
Rated speed : 2300
2nd version kW : 206.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

B05

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.3...11.5
100 s: (11.0...11.7)

Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 7.9...8.1
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

1st speed rpm : 1150
Rack travel in mm : 12.3...12.4
Del.quantity cm3/ : 12.7...12.9*
100 s: (-)
Spread cm3 : 0.4
100 s: (0.8)
2nd speed rpm : 300
Rack travel in mm : 8.00...8.10
Del.quantity cm3/ : 1.5...2.1 *
100 s: (-)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 650
Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750

Del.quantity : 113.0...115.0
1000 : (110.5...117.5)
Spread cm3 : 4.00
1000 : (7.00)

2nd version

Speed rpm : 1150
Del.quantity cm3/ : 127.0...129.0 *
1000 s: (124.0...132.0)
Spread cm3 : 4.0
1000 s: (8.0)

RATED SPEED

1st version

Setting point:

Speed rpm : 650
Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.70
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.50

2nd version

Setting point:

Speed rpm : 650 *
Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.30
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.1

Testing:

Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 420...460
Speed rpm : 550
Maximum rack trave: 1.80

FUEL DELIVERY CHARACTERISTICS

1st version

B06

Speed rpm : 1150
Del.quantity cm3/ : 132.0...136.0
1000 s: (129.0...139.0)
Spread cm3 : 5.00
1000 s: (8.00)

2nd version

Speed rpm : 600
Del.quantity cm3/ : 118.0...122.0 *
1000 s: (115.0...125.0)
Spread cm3 : 8.0
1000 s: (1.1)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1195...1210

2nd version

1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

See VDT-I-401/102.

Version 1: Without return-flow
restriction

Version 2: With return-flow restriction

* Version 2

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 e 4
Edition : 16.05.88
Replaces : 13.5.87
Test oil : ISO-4113

Combination no. : 0 401 848 708

Injection pump
Pump designation : PE8P110A320LS3802-10
EP type number : 0 411 818 710
Governor
Governor design. : RQ300/1150PA187-3
Governor no. : 0 421 801 133

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.3...11.5

100 s: (11.0...11.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 7.9...8.1
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Del.quantity : 113.0...115.0
1000 : (110.5...117.5)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.70

Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300
Rack travel in mm : 8.1

Testing:

Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 420...460
Speed rpm : 550
Maximum rack trave: 1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150
Del.quantity cm3/ : 132.0...136.0
1000 s: (129.0...139.0)
Spread cm3 : 5.00
1000 s: (8.00)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 d
Edition : 16.12.88
Replaces : 25.3.88
Test oil : ISO-4113
Combination no. : 0 401 848 757
Injection pump
Pump designation : PE8P120A920/5LS3827
EP type number : 0 411 828 712
Governor
Governor design. : RQV300...900PA475-1
Governor no. : 0 421 813 420

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8280.22.201

1st version kW : 309.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 4- 3- 6- 5-
7- 2

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.40...1.80
2nd speed rpm : 450
travel mm : 3.60...4.00
3rd speed rpm : 750
travel mm : 6.10...6.50
4th speed rpm : 900
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 960
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 900

Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 11.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 100
Minimum rack trave: 6.40
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 310...415

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.30
2nd pressure hPa : 440
Rack travel in m: 11.60...11.70
3rd pressure hPa : 340
Rack travel in m: 9.60...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm3/ : 227.0...235.0
1000 s: (224.0...238.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Note remarks

Combination no. : 0 401 848 762

Customer-spec. information
Customer : DAIMLER-BENZ

1st version kW : 243.0
Rated speed : 2300

Test oil
inlet temp. °C : 38...42

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.00...4.10
                   : (3.95...4.15)
Rack travel in mm  : 9.00...12.00
Firing order       : 8- 7- 2- 6- 3- 5-
                   : 4- 1
```

Phasing : 0-45-90-135-180-225-
270-315

Tolerance \pm ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm³ : 0.5

100 s: (0.9)

```

2nd speed      rpm : 300.0
Rack travel in mm : 5.0...5.2
Del.quantity   cm3/ : 1.2...1.8
                100 s: (0.9...2.1)
Spread         cm3 : 0.8
                100 s: (1.2)

```

(B) Setting of injection pump
with governor

1st speed	rpm	: 300
travel mm		: 1.40...1.60
2nd speed	rpm	: 800
travel mm		: 6.00...6.20
3rd speed	rpm	: 1200
travel mm		: 8.00...8.50
4th speed	rpm	: 1300
travel mm		: 9.70...10.30

Control-Lever position

```

Speed      rpm      : 1150
Rack travel in mm : 15.20...17.80

```

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 159.0...161.0
1000 : (156.0...164.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 11.00...11.20
3rd speed rpm : 700
Rack travel in m: 11.00...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 10.10...10.20
2nd pressure hPa : 500

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 173.5...175.5
1000 s: (170.5...178.5)
Spread cm3 : 7.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 7.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 k 9
Edition : 02.12.88
Replaces : 18.12.87
Test oil : ISO-4113

Combination no. : 0 401 848 763

Injection pump
Pump designation : PE8P120A32OLS3807-10
EP type number : 0 411 828 713
Governor
Governor design. : RQV300...1150PA545-6
Governor no. : 0 421 813 594

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM422 LA

1st version kW : 276.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 17.5...17.7

100 s: (17.2...18.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.2...2.0

100 s: (0.9...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.40...1.60

2nd speed rpm : 800
travel mm : 6.00...6.20

3rd speed rpm : 1200
travel mm : 8.00...8.50

4th speed rpm : 1300
travel mm : 9.70...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 175.0...177.0
1000 : (172.0...180.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 49...57

Testing:
1st rack travel in: 10.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 13...21

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.50...11.60
2nd speed rpm : 750
Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 410
Rack travel in m: 10.50...10.60
2nd pressure hPa : 490
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 187.0...190.0
1000 s: (184.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 137.0...139.0
1000 s: (134.0...142.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 d 5
Edition : 11.11.88
Replaces : 18.12.87
Test oil : ISO-4113

Combination no. : 0 401 848 793

Injection pump
Pump designation : PE8P110A320LS3842
EP type number : 0 411 818 714
Governor
Governor design. : RQV300..1050PA524-12
Governor no. : 0 421 813 679

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 192.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1

Phasing : 0-45-90-135-180-225-
 : 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 8.4...8.7
Del.quantity cm³/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm³ : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.50
2nd speed rpm : 800
travel mm : 5.60...6.00
3rd speed rpm : 1110
travel mm : 7.80...8.40
4th speed rpm : 1150
travel mm : 8.80...9.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1100
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 117.0...119.0
1000 : (114.5...121.5)

Spread cm³ : 4.00
 1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 10.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26

Testing:
Speed rpm : 200
Minimum rack trave: 10.50
Speed rpm : 300
Rack travel in mm : 8.40...8.70

CONSTANT REGULATION
Speed rpm : 300...450

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 96.0...99.0
 1000 s: (93.0...102.0)
Spread cm³ : 6.00
 1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
 1000 s: (136.0...164.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 m 3
Edition : 28.11.88
Replaces : 27.10.88
Test oil : ISO-4113

Combination no. : 0 401 848 797

Injection pump
Pump designation : PE8P110A320LS3813-10
EP type number : 0 411 818 712
Governor
Governor design. : RQV350...1150PA378-8
Governor no. : 0 421 813 725

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.4...11.6

100 s: (11.1...11.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 7.4...7.7
Del.quantity cm3/ : 1.4...1.8
100 s: (1.1...2.0)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.10
2nd speed rpm : 500
travel mm : 3.20...3.50
3rd speed rpm : 800
travel mm : 4.50...4.80
4th speed rpm : 1200
travel mm : 8.00...8.50
5th speed rpm : 1275
travel mm : 9.30...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1230
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750

Del.quantity : 114.0...116.0
1000 : (111.5...118.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 10.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 7.40...7.70

CONSTANT REGULATION

Speed rpm : 350...700

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150
Del.quantity cm³/ : 132.0...137.0
1000 s: (129.0...140.0)
Spread cm³ : 6.00
1000 s: (9.00)
Speed rpm : 1150
Del.quantity cm³/ : 84.0...87.0 *
1000 s: (81.0...90.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 d 7
Edition : 28.11.88
Replaces : 7.10.88
Test oil : ISO-4113

Combination no. : 0 401 848 800

Injection pump
Pump designation : PE8P110A320LS3842-1
EP type number : 0 411 818 716
Governor
Governor design. : RQV350..1050PA378-7
Governor no. : 0 421 813 714

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.4...12.6
100 s: (12.1...12.8)

Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 350.0
Rack travel in mm : 8.0...8.3
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.50...1.70
2nd speed rpm : 800
travel mm : 4.90...5.30
3rd speed rpm : 1100
travel mm : 7.90...8.50
4th speed rpm : 1150
travel mm : 8.90...9.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Del.quantity : 124.0...126.0
1000 : (121.5...128.5)

Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 56....64

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 250
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 8.00...8.30

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm3/ : 137.0...141.0
1000 s: (134.0...144.0)
Spread cm3 : 5.00
1000 s: (8.00)
Speed rpm : 1050
Del.quantity cm3/ : 87.0...89.0 *
1000 s: (84.0...92.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 n
Edition : 28.11.88
Replaces : 26.8.88
Test oil : ISO-4113

Combination no. : 0 401 848 801

Injection pump
Pump designation : PE8P110A320LS3848
EP type number : 0 411 818 718
Governor
Governor design. : RQV300...950PA884-4
Governor no. : 0 421 813 716

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 206.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values —

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 13.3...13.5

100 s: (13.0...13.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 8.0...8.3
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.30
2nd speed rpm : 500
travel mm : 3.30...3.60
3rd speed rpm : 800
travel mm : 6.30...6.60
4th speed rpm : 1000
travel mm : 8.30...8.70
5th speed rpm : 1075
travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950

Del.quantity : 133.0...135.0
1000 : (130.5...137.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 15...23

Testing:

Speed rpm : 200
Minimum rack travel: 9.80
Speed rpm : 300
Rack travel in mm : 8.00...8.30

CONSTANT REGULATION

Speed rpm : 300...450

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 n 1
Edition : 12.01.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 848 802
Injection pump
Pump designation : PE8P110A320LS3848
EP type number : 0 411 818 718
Governor
Governor design. : RQ300/950PA187-23
Governor no. : 0 421 801 456

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 206.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.1...13.4

100 s: (12.8...13.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...8.0
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Del.quantity : 131.0...134.0
1000 : (128.5...136.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.00

Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.8

Testing:

Speed rpm : 200

Minimum rack travel: 9.50

Speed rpm : 300

Rack travel in mm : 7.70...8.00

Rack travel in mm : 2.00

Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm³/ : 125.0...127.0

1000 s: (122.0...130.0)

Spread cm³ : 5.00

1000 s: (11.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 16,0 g 2
Edition : 16.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 849 153
Injection pump
Pump designation : PE10P100A320LS821
EP type number : 0 411 809 131
Governor
Governor design. : RQV350...1250PA378-9
Governor no. : 0 421 813 733

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 403

1st version kW : 229.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 130...150

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50
: (3.35...3.55)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1230
Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 9.9...10.1
100 s: (9.7...10.3)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.7...8.0
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 350
travel mm : 1.10...1.30
2nd speed rpm : 500
travel mm : 3.00...3.30
3rd speed rpm : 1300
travel mm : 8.60...9.10
4th speed rpm : 1375
travel mm : 9.50...10.10

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1250
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1230
Del.quantity : 99.0...101.0
1000 : (97.0...103.0)

Spread cm3 : 3.00
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 65...73

Testing:

1st rack travel in: 9.80
Speed rpm : 1290...1300

2nd rack travel in: 4.00
Speed rpm : 1360...1390

4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 250

Minimum rack travel: 9.40

Speed rpm : 350

Rack travel in mm : 7.70...8.00

CONSTANT REGULATION

Speed rpm : 350...550

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1230

Del.quantity cm3/ : 75.0...77.0 *
1000 s: (72.5...79.5)

Spread cm3 : 3.00
1000 s: (6.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...140.0
1000 s: (116.0...144.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 e 4
 Edition : 12.01.89
 Replaces : 17.10.88
 Test oil : ISO-4113
 Combination no. : 0 401 849 733
 Injection pump
 Pump designation : PE10P120A320LS3824-10
 EP type number : 0 411 829 701
 Governor
 Governor design. : RQ300/1150PA546-11
 Governor no. : 0 421 801 384

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 423 A

1st version kW : 301.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 130...150

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 15.2...15.4
 100 s: (14.9...15.7)

Spread cm³ : 0.5
 100 s: (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.2
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 700
 Del.quantity : 152.0...154.0
 1000 : (149.0...157.0)
 Spread cm³ : 5.00
 1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.00...11.10
2nd speed rpm : 750
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.60

Measurement

Speed 1/min : 500
1st pressure hPa : 360
Rack travel in m: 10.50...10.60
2nd pressure hPa : 420
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750

Del.quantity cm3/ : 169.0...172.0
1000 s: (166.0...175.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 16,0 d3
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 849 743
Injection pump
Pump designation : PE10P110A920/5LS3164
EP type number : 0 411 819 708
Governor
Governor design. : RQV300...1150PA549-4
Governor no. : 0 421 813 730

Customer-spec. information
Customer : KHD

Engine : BF10L513

1st version kW : 278.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

C01

Firing order : 1-10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 14.2...14.4

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.2...1.7
100 s: (1.0...2.0)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.40
2nd speed rpm : 450
travel mm : 2.70...3.30
3rd speed rpm : 700
travel mm : 4.50...5.10
4th speed rpm : 1195
travel mm : 8.40...8.60
5th speed rpm : 1310
travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1180
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1200
Del.quantity : 142.0...144.0
1000 : (139.0...147.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 17...25

Testing:

Speed rpm : 100
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...530

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.50...12.60
2nd speed rpm : 650
Rack travel in m: 12.90...13.10
3rd speed rpm : 950
Rack travel in m: 12.80...13.00
4th speed rpm : 1050
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 450
Pressure hPa : 1200
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 11.70...11.80
2nd pressure hPa : 310
Rack travel in m: 12.30...12.40
3rd pressure hPa : 260

Rack travel in m: 11.90...12.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 148.0...152.0
1000 s: (145.0...155.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 118.5...121.5
1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 12.5...17.5
1000 s: (10.0...20.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 10,0 b2
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 856 158
 Injection pump
 Pump designation : PE6P110A721RS369
 EP type number : 0 411 816 121
 Governor
 Governor design. : RQV250...1300PA413-4
 Governor no. : 0 421 815 732

Customer-spec. information
 Customer : STEYR

Engine : WD615.61/71

1st version kW : 191.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

C04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 14.5...14.7

100 s: (14.2...15.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 9.2...9.4

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.50...0.90

2nd speed rpm : 500
 travel mm : 2.40...3.00

3rd speed rpm : 800
 travel mm : 4.40...5.00

4th speed rpm : 1340
 travel mm : 8.60...8.80

5th speed rpm : 1450
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:
1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21

Testing:
Speed rpm : 100
Minimum rack travel: 10.70
Speed rpm : 250
Rack travel in mm : 9.20...9.40
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 14.40...14.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 13.20...13.40
2nd pressure hPa : 390
Rack travel in m: 14.10...14.20
3rd pressure hPa : 320
Rack travel in m: 13.50...13.70

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700

Del.quantity cm³/ : 131.0...135.0
1000 s: (129.0...137.0)
Speed rpm : 700
Del.quantity cm³/ : 101.0...103.0
1000 s: (98.0...106.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 t 1
Edition : 11.11.88
Replaces : 19.12.86
Test oil : ISO-4113

Combination no. : 0 401 870 706

Injection pump
Pump designation : PE12P110A320LS3837-1
EP type number : 0 411 810 710
Governor
Governor design. : RSV425...1050POA824-10
Governor no. : 0 421 833 251

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 424

1st version kW : 286.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X1.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

C06

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
Phasing : 180-225-240-285-300-
345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 11.40...11.50
Del.quantity cm3/ : 11.5...11.7
100 s: (11.2...11.9)
Spread cm3 : 0.4
100 s: (0.8)

2nd speed rpm : 425.0
Rack travel in mm : 7.0...7.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.2)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 115.0...117.0
1000 : (112.5...119.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.40

Speed rpm : 1065...1070
2nd rack travel in: 4.00
Speed rpm : 1120...1133

LOW IDLE 1

Control lever
position degrees: 24...31
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack trave: 9.30
Speed rpm : 425
Rack travel in mm : 7.00...7.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 95.0...100.0
1000 s: (92.0...103.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

: LIEBHERR

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6o10
Edition : 28.11.88
Replaces : 24.10.88
Test oil : ISO-4113

Combination no. : 0 401 876 293

Injection pump
Pump designation : PE6P120A32ORS415-1Z
EP type number : 0 411 826 136
Governor
Governor design. : RSV250...900P5A508
Governor no. : 0 421 833 193

Customer-spec. information
Customer : DAF

Engine : DKX 1160E

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.00

Speed rpm : 935...945

2nd rack travel in: 4.00

Speed rpm : 1010...1040

3rd rack travel in: 4.00

Speed rpm : 1020...1050
4th rack travel in: 1180
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 395...455

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 11.90...12.00
3rd speed rpm : 725
Rack travel in m: 11.50...11.70
4th speed rpm : 775
Rack travel in m: 11.20...11.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 300
Rack travel in m: 11.10...11.20
3rd pressure hPa : 255
Rack travel in m: 10.50...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 875
Del.quantity cm3/ : 170.0...174.0
1000 s: (167.0...177.0)
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 935...945

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 305.0...345.0
1000 s: (301.0...349.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 c 1
 Edition : 09.12.88
 Replaces : 4.11.88
 Test oil : ISO-4113
 Combination no. : 0 401 876 322
 Injection pump
 Pump designation : PE6P110A320RS497
 EP type number : 0 411 816 165
 Governor
 Governor design. : RSV200...1200P1A374-
 2
 Governor no. : 0 421 833 205
 Customer-spec. information
 Customer : VOLVO

Engine : TJD71A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.70...11.80
 Del.quantity cm3/ : 11.6...11.8
 100 s : (11.3...12.1)
 Spread cm3 : 0.4
 100 s : (0.7)

2nd speed rpm : 200.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.6...2.2
 100 s : (-)
 Spread cm3 : 0.3
 100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 116.0...118.0
 1000 : (113.0...121.0)
 Spread cm3 : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 54...62

Testing:
 1st rack travel in: 10.70
 Speed rpm : 1240...1250
 2nd rack travel in: 4.00
 Speed rpm : 1290...1320
 4th rack travel in: 1420

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 4.8

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

Speed rpm : 280...340

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 800

Rack travel in m: 11.60...11.70

3rd pressure hPa : 270

Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 66.0...68.0

1000 s: (63.0...71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 185.0...215.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Del.quantity cm3/ : 16.0...22.0

1000 s: (-)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q
 Edition : 09.12.88
 Replaces : 1.9.88
 Test oil : ISO-4113

Combination no. : 0 401 876 327

Injection pump
 Pump designation : PE6P110A320RS499
 EP type number : 0 411 816 169
 Governor
 Governor design. : RSV325...1400P2A374-
 3
 Governor no. : 0 421 833 220

Customer-spec. information
 Customer : VOLVO-PENTA

Engine : TAMD61A

1st version kW : 220.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.4...11.6
 100 s: (11.1...11.9)

Spread cm3 : 0.4
 100 s: (0.7)

2nd speed rpm : 325.0
 Rack travel in mm : 4.1...4.3
 Del.quantity cm3/ : 1.1...1.5
 100 s: (-)
 Spread cm3 : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 900
 Del.quantity : 114.0...116.0
 1000 : (111.0...119.0)
 Spread cm3 : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 47...55

Testing:
 1st rack travel in: 9.80
 Speed rpm : 1420...1430

2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1620
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 3.7
Speed rpm : 325
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 380...440

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.10...11.20
3rd speed rpm : 600
Rack travel in m: 11.10...11.40
5th speed rpm : 375
Rack travel in m: 11.55...11.65

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 550
Rack travel in m: 10.50...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1400
Del.quantity cm3/ : 116.0...122.0
1000 s: (115.0...125.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 48.0...52.0
1000 s: (45.0...55.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 11.0...15.0
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION
Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b
Edition : 09.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 761

Injection pump
Pump designation : PE6P120A320RS3206
EP type number : 0 411 826 773
Governor
Governor design. : RSV250...900P4A374-6
Governor no. : 0 421 833 283

Customer-spec. information
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness : 6.00X1.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 275.5...277.5

1000 : (272.5...280.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.70
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 985...1015
3rd rack travel in: 4.00
Speed rpm : 995...1025
4th rack travel in: 1130
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.6
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 900
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 240
Rack travel in m: 8.90...9.00
3rd pressure hPa : 840
Rack travel in m: 11.30...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 177.0...179.0
1000 s: (174.0...182.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (250.0...290.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b2
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 762
 Injection pump
 Pump designation : PE6P120A32ORS3206
 EP type number : 0 411 826 773
 Governor
 Governor design. : RSV250...900P4A374-7
 Governor no. : 0 421 833 284

Customer-spec. information
 Customer : VOLVO-PENTA

Engine : TMD 122 A (HD)

1st version kW : 236.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.0...5.2
 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 212.5...214.5

1000 : (209.5...217.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 8.90
Speed rpm : 910...920
2nd rack travel in: 4.00
Speed rpm : 940...970
4th rack travel in: 1130
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.6
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 900
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 430
Rack travel in m: 8.70...8.80
3rd pressure hPa : 610
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 173.0...175.0
1000 s: (170.0...178.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 910...920

STARTING FUEL DELIVERY

Del.quantity cm3/ : 260.0...280.0
1000 s: (250.0...290.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 L2
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 767
 Injection pump
 Pump designation : PE6P120A32ORS3088
 EP type number : 0 411 826 720
 Governor
 Governor design. : RSV200...1000P4/421-
 5
 Governor no. : 0 421 833 307

Customer-spec. information
 Customer : VOLVO

Engine : TD121G/IR

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.35...2.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.3)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 177.0...179.0

1000 : (174.0...182.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.70

Speed rpm : 745...750

2nd rack travel in: 4.00

Speed rpm : 770...800
4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 3.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 250
Rack travel in mm : 4.00...4.20
Rack travel in mm : 2.00
Speed rpm : 265...325

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 745...750

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 390.0...440.0
1000 s: (386.0...444.0)
Rack travel in mm : 20.00...21.00

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 a9
Edition : 28.11.88
Replaces : 5.8.88
Test oil : ISO-4113

Combination no. : 0 402 036 047

Injection pump
Pump designation : PES6P120A720/3LS470-3
EP type number : 0 412 026 051
Governor
Governor design. : RQ250/1100PA679
Governor no. : 0 421 801 228

Customer-spec. information
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

C20

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.1)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack trave: 7.20
Speed rpm : 250
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 13.30...13.50
2nd speed rpm : 1100
Rack travel in m: 12.30...12.40
3rd speed rpm : 965
Rack travel in m: 13.10...13.30
4th speed rpm : 1010
Rack travel in m: 12.70...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 250
Rack travel in m: 9.00...9.10
3rd pressure hPa : 700
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

C21

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 228.0...234.0
1000 s: (225.0...237.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (205.0...225.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7717

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a11
Edition : 11.11.88
Replaces : 5.8.88
Test oil : ISO-4113

Combination no. : 0 402 036 048

Injection pump
Pump designation : PES6P120A720/3LS470-
3
EP type number : 0 412 026 051
Governor
Governor design. : RQV300...1100PA707
Governor no. : 0 421 813 440

Customer-spec. information
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...1.90

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.60...6.00

4th speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:
1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 15...23

Testing:
Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 290...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.30...12.40
2nd speed rpm : 750
Rack travel in m: 12.60...12.70
3rd speed rpm : 1010
Rack travel in m: 12.40...12.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 250
Rack travel in m: 9.20...9.30
3rd pressure hPa : 700
Rack travel in m: 11.40...11.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 229.0...232.0
1000 s: (226.0...235.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 228.0...234.0
1000 s: (225.0...237.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (205.0...225.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 2-7718

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j
Edition : 28.11.88
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 402 036 726

Injection pump
Pump designation : PES6P120A720LS3205
EP type number : 0 412 026 729
Governor
Governor design. : RQ300/1100PA813-2
Governor no. : 0 421 801 416

Customer-spec. information
Customer : MAN

Engine : D2866LX

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 110
Rack travel in m: 10.00...10.10
3rd pressure hPa : 470
Rack travel in m: 11.70...12.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 m
Edition : 28.11.88
Replaces : 8.81
Test oil : ISO-4113
Combination no. : 0 402 045 020
Injection pump
Pump designation : PES5P100A820LS416
EP type number : 0 412 005 020
Governor
Governor design. : RQ300/1100PA327R
Governor no. : 0 421 801 062

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 141.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del. quantity cm³/ : 12.2...12.4

100 s : (12.0...12.6)

Spread cm³ : 0.4

100 s : (-)

2nd speed rpm : 300.0
Rack travel in mm : 8.3...8.5
Del. quantity cm³/ : 1.0...1.6
100 s : (0.7...1.8)

Spread cm³ : 0.4
100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Del. quantity : 122.0...124.0
1000 : (120.0...126.0)
Spread cm³ : 4.00
1000 : (-)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 14.2

Testing:

1st rack travel in: 12.60
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.4

Testing:

Speed rpm : 100

Minimum rack trave: 10.00

Speed rpm : 300

Rack travel in mm : 8.30...8.50

Rack travel in mm : 2.00

Speed rpm : 375...415

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Del.quantity cm³/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 l 5
 Edition : 12.01.89
 Replaces : 11.85
 Test oil : ISO-4113
 Combination no. : 0 402 046 240
 Injection pump
 Pump designation : PES6P110A820LS442
 EP type number : 0 412 016 060
 Governor
 Governor design. : RQ300/1100PA327-5
 Governor no. : 0 421 801 163

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 162.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.3...11.5

100 s: (11.0...11.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 8.2...8.4
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.2)
 Spread cm3 : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 113.0...115.0

1000 : (110.0...118.0)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 365...405

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 90.0...94.0
1000 s: (87.0...97.0)
Spread cm3 : 6.00
1000 s: (9.00)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (126.0...144.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,6 c
Edition : 09.12.88
Replaces : 7.84
Test oil : ISO-4113

Combination no. : 0 402 046 292

Injection pump
Pump designation : PES6P110A32ORS472
EP type number : 0 412 016 065
Governor
Governor design. : RQ275/1300PA689
Governor no. : 0 421 801 239

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8220-12

1st version kW : 148.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 8.90...9.00

Del.quantity cm3/ : 9.6...9.9

100 s: (9.3...10.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 96.0...99.0

1000 : (93.5...101.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 7.90

Speed rpm : 1345...1360

2nd rack travel in: 4.00

Speed rpm : 1400...1430

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 6.50

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 355...395

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 8.90...9.00

2nd speed rpm : 700

Rack travel in m: 9.20...9.30

3rd speed rpm : 865

Rack travel in m: 9.10...9.30

4th speed rpm : 970

Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 87.0...91.0

1000 s: (84.0...94.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.90

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 145.0...165.0

1000 s: (141.0...169.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 15.0...20.0

1000 s: (12.5...22.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 6
 Edition : 16.12.88
 Replaces : 4.85
 Test oil : ISO-4113
 Combination no. : 0 402 046 313
 Injection pump
 Pump designation : PES6P120A320RS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1050PA495-8
 Governor no. : 0 421 813 482

Customer-spec. information
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 6.0...6.2
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20
 2nd speed rpm : 450
 travel mm : 3.30...3.80
 3rd speed rpm : 800
 travel mm : 5.70...6.00
 4th speed rpm : 1050
 travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Del.quantity : 188.0...190.0
 1000 : (185.0...193.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.30

Speed rpm : 1110...1120

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 4...12

Testing:

Speed rpm : 200

Minimum rack travel: 5.50

Speed rpm : 275

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.10...8.30

2nd pressure hPa : 360

Rack travel in m: 9.70...9.80

3rd pressure hPa : 160

Rack travel in m: 8.50...8.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/ : 171.0...177.0

1000 s: (168.0...180.0)

Speed rpm : 500

Del.quantity cm3/ : 102.0...104.0
1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: -1.00

Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : -6.00...-6.20

Remarks:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 g
Edition : 02.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 337
Injection pump
Pump designation : PES6P120A320RS520
EP type number : 0 412 026 056
Governor
Governor design. : RGV275...1050PA906
Governor no. : 0 421 813 724

Customer-spec. information
Customer : RVI

Engine : MIDR062045D

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

D06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 10.20...10.30
Del.quantity cm3/ : 18.5...18.7
100 s: (18.2...19.0)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.20
2nd speed rpm : 450
travel mm : 3.30...3.80
3rd speed rpm : 800
travel mm : 5.70...6.00
4th speed rpm : 1050
travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1130
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 185.0...187.0
1000 : (182.0...190.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 60...68

Testing:
1st rack travel in: 9.20
Speed rpm : 1110...1120
2nd rack travel in: 3.90
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 4...12

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 275...390

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 360
Rack travel in m: 9.80...9.90
3rd pressure hPa : 160
Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 166.0...172.0
1000 s: (163.0...175.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: -1.00
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -6.10...-6.30

Remarks:

:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 a
Edition : 09.12.88
Replaces : 23.2.88
Test oil : ISO-4113

Combination no. : 0 402 046 757

Injection pump
Pump designation : PES6P110A720RS3140
EP type number : 0 412 016 716
Governor
Governor design. : RQV275...1100PA501-2
Governor no. : 0 421 813 462

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.21.102

1st version kW : 192.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 14.9...15.2

100 s: (14.6...15.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.9...7.3

Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 400

travel mm : 2.70...3.00

3rd speed rpm : 850

travel mm : 5.00...5.20

4th speed rpm : 1100

travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 149.0...152.0

1000 : (146.5...154.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 10.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 8.60
Speed rpm : 275
Rack travel in mm : 6.90...7.30

CONSTANT REGULATION
Speed rpm : 280...525

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.60
2nd pressure hPa : 310
Rack travel in m: 11.40...11.50
3rd pressure hPa : 280
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 118.0...121.0
1000 s: (115.5...123.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 a 1
 Edition : 09.12.88
 Replaces : 12.9.86
 Test oil : ISO-4113

Combination no. : 0 402 046 760

Injection pump
 Pump designation : PES6P110A720RS3140
 EP type number : 0 412 016 716
 Governor
 Governor design. : RQV275...1150PA501-3
 Governor no. : 0 421 813 471

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.21.002

1st version kW : 177.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.8...7.0

Del.quantity cm³/ : 2.2...2.7

100 s: (1.9...2.9)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 400

travel mm : 2.70...3.00

3rd speed rpm : 850

travel mm : 5.00...5.20

4th speed rpm : 1150

travel mm : 7.30...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 10.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.9

Testing:
Speed rpm : 100
Minimum rack travel: 8.40
Speed rpm : 275
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION
Speed rpm : 275...520

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 240
Rack travel in m: 10.80...10.90
3rd pressure hPa : 210
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 105.0...108.0
1000 s: (102.5...110.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

Remarks:
:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 b 1
 Edition : 16.12.88
 Replaces : 19.5.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 788
 Injection pump
 Pump designation : PES6P110A32ORS3190
 EP type number : 0 412 016 720
 Governor
 Governor design. : RQV275...1175PA833-3
 Governor no. : 0 421 813 656

Customer-spec. information
 Customer : RVI

Engine : MIDR 060226D

1st version kW : 151.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00
 & maximum rack tra: 18.0...21.0
 Difference ° CS : 4.00...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 11.6...11.9

100 s: (11.3...12.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 2.7...3.2

100 s: (2.4...3.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.10

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 800

travel mm : 5.10...5.50

4th speed rpm : 1175

travel mm : 7.20...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 116.0...119.0
1000 : (113.5...121.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 12.40
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...21

Testing:
Speed rpm : 200
Minimum rack trave: 7.00
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 400
Rack travel in m: 12.80...12.90
3rd pressure hPa : 160
Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 111.5...116.5
1000 s: (108.5...119.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: -1.00
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -8.60...-8.80
Del.quantity cm3/ : 27.0...32.0
1000 s: (24.5...34.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 d
Edition : 16.12.88
Replaces : 5.8.88
Test oil : ISO-4113

Combination no. : 0 402 046 796

Injection pump
Pump designation : PES6P110A720RS3140
EP type number : 0 412 016 716
Governor
Governor design. : RQV275...1150PA501-5
Governor no. : 0 421 813 694

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.21.010

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10

2nd speed rpm : 400
travel mm : 2.50...2.90

3rd speed rpm : 350
travel mm : 4.90...5.30

4th speed rpm : 1150
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 100
Minimum rack travel: 8.40
Speed rpm : 275
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

Speed rpm : 275...520

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 240

Rack travel in m: 10.80...10.90

3rd pressure hPa : 210

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 105.0...108.0
1000 s: (102.5...110.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 1
 Edition : 17.1.89
 Replaces : 5.8.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 799
 Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1075PA850-1
 Governor no. : 0 421 813 708

Customer-spec. information
 Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 167.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 14.5...14.7

100 s : (14.2...15.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm³/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40

2nd speed rpm : 400
 travel mm : 2.70...3.30

3rd speed rpm : 600
 travel mm : 4.20...4.80

4th speed rpm : 1120
 travel mm : 8.40...8.60

5th speed rpm : 1245
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 900

Del. quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 12.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION
Speed rpm : 300...490

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.60...13.80
3rd speed rpm : 950
Rack travel in m: 13.50...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.60...12.80
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 148.0...152.0
1000 s: (145.0...155.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a13
 Edition : 04.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 803
 Injection pump
 Pump designation : PES6P110A820LS3131-1
 EP type number : 0 412 016 717
 Governor
 Governor design. : RQ300/1100PA722-1
 Governor no. : 0 421 801 461

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 y
Edition : 04.11.88
Replaces : 9.3.87
Test oil : ISO-4113

Combination no. : 0 402 670 801

Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RSV350...750POA825-1
Governor no. : 0 421 833 248

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 407.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3
- 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 24.1...24.3
100 s: (23.8...24.6)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 23...31

Testing:

1st rack travel in: 14.80
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 15.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 d
Edition : 04.11.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 843

Injection pump
Pump designation : PES6P120A720LS7161
EP type number : 0 412 726 817
Governor
Governor design. : RQ300/1050PA897
Governor no. : 0 421 801 452

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.8...6.2
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.6
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.60
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.20...13.40
3rd pressure hPa : 800
Rack travel in m: 14.10...14.30
4th pressure hPa : 1200
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 h
Edition : 02.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 845

Injection pump
Pump designation : PES6P120A720LS7107
EP type number : 0 412 726 801
Governor
Governor design. : RQ300/1100PA903
Governor no. : 0 421 801 455

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447ha

1st version kW : 206.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.8...6.2
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : 230
Rack travel in m: 11.30...11.50
2nd pressure hPa : 370
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600
Del.quantity cm3/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 9
Edition : 09.01.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 436 108

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV350...1100MW82-3
Governor no. : 0 420 083 162

Cust. part no. : 3914125

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 186.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
: (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.40...12.50
Del.quantity cm3/ : 14.8...15.0
100 s: (14.6...15.2)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.2...7.4
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240
travel mm : 8.80...9.20
2nd speed rpm : 1140
travel mm : 7.80...8.00
3rd speed rpm : 700
travel mm : 3.80...4.40
4th speed rpm : 350
travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 900
Del.quantity : 148.0...150.0
1000 : (146.0...152.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:

1st rack travel in: 11.40
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 350
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 12.40...12.50
2nd speed rpm : 700
Rack travel in m: 13.20...13.30
3rd speed rpm : 1050
Rack travel in m: 12.40...12.60
4th speed rpm : 900
Rack travel in m: 12.80...13.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.30...11.40
2nd pressure hPa : 520
Rack travel in m: 12.70...13.00
3rd pressure hPa : 900
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 159.0...161.0
1000 s: (157.0...163.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 103.0...106.0
1000 s: (101.5...107.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

Adjust stop lever to 0.5...1.0 mm
before stop.
Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 7
Edition : 11.11.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 436 109
Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV300...1050MW82-4
Governor no. : 0 420 083 168

Cust. part no. : 3915581

Customer spec. information
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

E01

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
: (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.60...12.70
Del. quantity cm3/ : 14.8...15.0
100 s: (14.6...15.2)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...7.9
Del. quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1210
travel mm : 9.00...9.40
2nd speed rpm : 1100
travel mm : 7.90...8.10
3rd speed rpm : 550
travel mm : 3.00...3.60
4th speed rpm : 300
travel mm : 1.10...1.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del. quantity : 148.0...150.0
1000 : (146.0...152.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:
Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 300
Rack travel in mm : 7.70...7.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 520
Rack travel in m: 11.90...12.20
3rd pressure hPa : 900
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 145.5...148.5
1000 s: (143.0...151.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 215.0...225.0
1000 s: (212.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.70...7.90
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.
Adjust stop lever to 0.5...1.0 mm
before stop.
Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 F
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 444 116
Injection pump
Pump designation : PES4MW100/720RS1127-
1
EP type number : 0 413 404 106
Governor
Governor design. : RQV300...1400MW48-7
Governor no. : 0 420 083 172

Customer-spec. information
Customer : DB

Engine : OM 364A

1st version kW : 70.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 6.7...6.9

100 s: (6.5...7.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550
travel mm : 9.00...9.40

2nd speed rpm : 1450
travel mm : 8.20...8.40

3rd speed rpm : 550
travel mm : 2.80...3.40

4th speed rpm : 300
travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 67.0...69.0

1000 : (65.0...71.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 9.50
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.0

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.90...8.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.00...10.10
2nd speed rpm : 750
Rack travel in m: 10.80...10.90
3rd speed rpm : 950
Rack travel in m: 10.60...10.90
4th speed rpm : 1100
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm³/ : 60.0...62.0
1000 s: (57.0...65.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.90...8.10
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 R22
Edition : 09.12.88
Replaces : 19.08.88
Test oil : ISO-4113

Combination no. : 0 403 446 192

Injection pump
Pump designation : PES6MW100/320RS1112
EP type number : 0 413 406 108
Governor
Governor design. : RQV350...1300MW72-2
Governor no. : 0 420 083 141

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kW : 136.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 016

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.5

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...50

Testing:

1st rack travel in: 9.00
Speed rpm : 1360...1380
2nd rack travel in: 4.00
Speed rpm : 1460...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

Speed rpm : 300...450

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1300
Del.quantity cm³/ : 88.0...92.0
1000 s: (86.0...94.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1360...1380

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.50

Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose
with restriction of 1.2 mm diameter.

Before checking sleeve position,
first adjust latching.

In unlatched condition, do not
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 j 2
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 299
 Injection pump
 Pump designation : PES6A95D410RS2751
 EP type number : 9 400 084 013
 Governor
 Governor design. : RSV650...1250A8C2231
 -2L
 Governor no. : 9 420 083 236

Customer-spec. information
 Customer : FORD (FNH)

Engine : 6,6 L TC

1st version kW : 123.8
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

E07

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm : 1220

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 9.8...10.0

100 s: (9.5...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 0.7...1.1
 100 s: (0.4...1.3)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1220
 Del.quantity : 98.0...100.0
 1000 : (95.5...102.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:
1st rack travel in: 10.00
Speed rpm : 1265...1270
2nd rack travel in: 4.00
Speed rpm : 1295...1300
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 650
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 690...750

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 83.0...87.0
1000 s: (81.0...89.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION
Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 f 1
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 300
 Injection pump
 Pump designation : PES6A95D410RS2714
 EP type number : 9 400 084 001
 Governor
 Governor design. : RQV375...1300AB1208-
 2L
 Governor no. : 9 420 080 258

Customer-spec. information
 Customer : FORD (FTO)

Engine : 6,6 TC

1st version kW : 140.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
 : (3.10...3.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.90
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 7.6...7.8

100 s: (7.4...8.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0
 Rack travel in mm : 6.7...6.9
 Del. quantity cm³/ : 0.9...1.3
 100 s: (0.7...1.6)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1345
 travel mm : 8.50...8.60
 2nd speed rpm : 350
 travel mm : 1.30...1.60
 3rd speed rpm : 700
 travel mm : 4.10...4.50
 4th speed rpm : 1100
 travel mm : 6.30...6.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1345
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 400
Del.quantity : 76.0...78.0
1000 : (74.0...80.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 113...121

Testing:
1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 375
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 460...530

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 11.70...11.80
3rd speed rpm : 950
Rack travel in m: 11.40...11.60
4th speed rpm : 1050
Rack travel in m: 11.20...11.50

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 400
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 500

1st pressure hPa : -

E10

Rack travel in m: 11.00...11.10
2nd pressure hPa : 310
Rack travel in m: 11.50...11.60
3rd pressure hPa : 280
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 400
Speed rpm : 600
Del.quantity cm3/ : 69.5...72.5
1000 s: (67.0...75.0)
Aneroid pressure h: 400
Speed rpm : 950
Del.quantity cm3/ : 77.0...80.0
1000 s: (74.5...82.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 58.0...60.0
1000 s: (56.0...62.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 d
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 301
Injection pump
Pump designation : PES6A85D41ORS2415
EP type number : 0 410 886 907
Governor
Governor design. : RQV300...1325AB1234-
1L
Governor no. : 9 420 080 259

Customer-spec. information
Customer : DEUTZ ARGENTINA

Engine : BF 6L 913

1st version kW : 116.0
Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.2

100 s: (0.5)

2nd speed rpm : 300.0
Rack travel in mm : 7.9...8.1
Del.quantity cm3/ : 1.5...1.9
100 s: (1.3...2.1)
Spread cm3 : 0.2
100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 8.50...8.60
2nd speed rpm : 300
travel mm : 0.50...0.90
3rd speed rpm : 600
travel mm : 2.70...3.10
4th speed rpm : 900
travel mm : 4.50...4.90
5th speed rpm : 1200
travel mm : 6.50...6.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1325
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1325
Del.quantity : 77.0...78.0
1000 : (75.0...80.0)

Spread cm³ : 2.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 10.00
Speed rpm : 1365...1375
2nd rack travel in: 4.00
Speed rpm : 1465...1485
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 150
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 370...530

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1325
Rack travel in m: 11.00...11.10
2nd speed rpm : 500
Rack travel in m: 12.00...12.10
3rd speed rpm : 800
Rack travel in m: 11.80...12.10
4th speed rpm : 1100
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 74.0...76.0
1000 s: (71.5...78.5)
Speed rpm : 800
Del.quantity cm³/ : 77.5...79.5
1000 s: (75.0...82.0)
Speed rpm : 1100
Del.quantity cm³/ : 78.0...80.0
1000 s: (75.5...82.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q11
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 087 295

Injection pump
Pump designation : PE6P110A320RS3108Y
EP type number : 0 411 816 729
Governor
Governor design. : RQV250...1100PA589-1
Governor no. : 9 420 080 166

Customer spec. information
Customer : VOLVO

Engine : THD 100 EC

1st version kW : 180.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 10.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 275
Rack travel in m: 9.90...10.00
3rd pressure hPa : 400
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 105.5...108.5
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,0 v5
 Edition : 01.09.88
 Replaces : 7.85
 Test oil : ISO-4113
 Combination no. : 9 400 087 297
 Injection pump
 Pump designation : PE6P120A72ORS7004
 EP type number : 0 412 626 801
 Governor
 Governor design. : RQ900PA695
 Governor no. : 9 420 080 167

Customer-spec. information
 Customer : SAAB - SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.3

Testing:

1st rack travel in: 11.80

Speed rpm : 900...905

2nd rack travel in: 4.00

Speed rpm : 941...955

4th rack travel in: 1000

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

Spread cm³ : 4.00

1000 s: (7.00)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 h
Edition : 01.09.88
Replaces : 8.85
Test oil : ISO-4113

Combination no. : 9 400 087 298

Injection pump
Pump designation : PE8P120A920/4LS7003
EP type number : 0 412 628 801
Governor
Governor design. : RQ900PA695
Governor no. : 9 420 080 167

Customer-spec. information
Customer : SAAB - SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.6

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 186.0...188.0

1000 : (183.0...191.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.80

Speed rpm : 900...905

2nd rack travel in: 4.00

Speed rpm : 941...955

4th rack travel in: 1000

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version -
Rack travel in mm : 4.90...5.10
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

:

APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 e 2
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 308
 Injection pump
 Pump designation : PE5P110A720RS479
 EP type number : 9 400 087 040
 Governor
 Governor design. : RQ300/1050PA781-1
 Governor no. : 9 420 080 187

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM355-5 A

1st version kW : 170.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
 : (3.30...3.50)

Rack travel in mm : 9.00...12.00

E20

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.6

100 s: (-)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 375...415

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 13.10...13.20
3rd speed rpm : 900
Rack travel in m: 12.70...13.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 400
Rack travel in m: 12.40...12.50
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 177.0...181.0
1000 s: (174.0...184.0)
Aneroid pressure h: 700
Speed rpm : 900

Del.quantity cm3/ : 174.0...178.0
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 112.5...115.5
1000 s: (110.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 13.30...14.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 o
Edition : 01.09.88
Replaces : 8.85
Test oil : ISO-4113

Combination no. : 9 400 087 318

Injection pump
Pump designation : PE6P110A720RS371
EP type number : 0 411 816 123
Governor
Governor design. : RQ300/1050PA419-1
Governor no. : 9 420 080 194

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 355-A

1st version kW : 210.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.1...16.3

100 s: (15.9...16.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.6...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 161.0...163.0

1000 : (159.0...165.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.50

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1270

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.60

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 440...500

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 152.0...156.0
1000 s: (149.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 144.0...160.0
1000 s: (140.0...164.0)

Rack travel in mm : 12.70...13.70

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 a3
 Edition : 01.09.88
 Replaces : 11.8.87
 Test oil : ISO-4113
 Combination no. : 9 400 087 325
 Injection pump
 Pump designation : PES6P80A720LS456
 EP type number : 9 400 087 029
 Governor
 Governor design. : RQV350...1000PA609-5
 Governor no. : 9 420 080 201

Customer-spec. information
 Customer : CATERPILLAR

Engine : 3306 T

1st version kW : 150.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 004

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.65...1.75
 : (1.60...1.80)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 990

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 11.1...11.2

100 s: (10.9...11.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.9...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1010

travel mm : 8.40...8.60

2nd speed rpm : 325

travel mm : 0.50...2.00

3rd speed rpm : 400

travel mm : 2.70...3.10

4th speed rpm : 500

travel mm : 3.50...4.20

5th speed rpm : 800

travel mm : 6.10...6.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 990

Del.quantity : 111.0...112.0

1000 : (109.5...113.5)

Spread cm3 : 2.00

1000 : (3.50)

RATED SPEED

1st version

Control lever
position degrees: 65...74

Testing:

1st rack travel in: 11.50
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1220
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 510...570

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 990
Rack travel in m: 12.50...12.60
2nd speed rpm : 500
Rack travel in m: 13.50...13.60
3rd speed rpm : 700
Rack travel in m: 13.40...13.60
4th speed rpm : 850
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 117.0...119.0
1000 s: (116.0...120.0)
Speed rpm : 700
Del.quantity cm3/ : 114.5...116.5
1000 s: (113.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 152.0...172.0
1000 s: (-)
Rack travel in mm : 17.60...18.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 f
Edition : 01.09.88
Replaces : 2.86
Test oil : ISO-4113

Combination no. : 9 400 087 329

Injection pump
Pump designation : PE5P100A720RS491
EP type number : 9 400 087 044
Governor
Governor design. : RQ300/1100PA269-1
Governor no. : 0 421 801 237

Customer-spec. information
Customer : DIAMLER-BENZ

Engine : OM 355-5

1st version kW : 200.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 9.70

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 375...415

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 117.0...121.0
1000 s: (114.5...123.5)

Spread cm3 : 5.00
1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q12
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 330
Injection pump
Pump designation : PE6P110A320RS3108X
EP type number : 0 411 816 730
Governor
Governor design. : RQV250...1100PA589-1
Governor no. : 9 420 080 166

Customer-spec. information
Customer : VOLVO

Engine : THD100 ED

1st version kW : 203.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.30

2nd speed rpm : 500
travel mm : 4.10...4.90

3rd speed rpm : 700
travel mm : 6.30...6.70

4th speed rpm : 950
travel mm : 6.30...6.70

5th speed rpm : 1100
travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 11.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 250...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 275
Rack travel in m: 9.60...9.70
3rd pressure hPa : 650
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 105.5...108.5
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm
APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 f 1
Edition : 01.09.88
Replaces : 8.3.88
Test oil : ISO-4113

Combination no. : 9 400 087 333

Injection pump
Pump designation : PE5P100A720RS491
EP type number : 9 400 087 044
Governor
Governor design. : RQ300/1100PA269-3
Governor no. : 9 420 080 207

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 355-5 OTIMIZ.

1st version kW : 185.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

F02

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.4...7.6
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.3)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 117.5...119.5
1000 : (115.5...121.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.5

Testing:

Speed rpm : 100

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 7.40...7.60

Rack travel in mm : 2.00

Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 102.5...105.5
1000 s: (100.0...108.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Rack travel in mm : 17.50...18.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 e 1
 Edition : 01.09.88
 Replaces : 1.86
 Test oil : ISO-4113
 Combination no. : 9 400 087 355
 Injection pump
 Pump designation : PE5P100A72ORS479
 EP type number : 9 400 087 040
 Governor
 Governor design. : RQ300/1050PA419-1
 Governor no. : 9 420 080 194

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 355-5 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
 : (3.30...3.50)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.6...13.7

100 s: (13.2...14.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 136.0...137.0

1000 : (132.5...140.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.2

Testing:

1st rack travel in: 10.10

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 440...480

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 129.0...133.0
1000 s: (126.0...136.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Rack travel in mm : 13.30...14.30

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 f
Edition : 01.09.88
Replaces : 24.7.87
Test oil : ISO-4113
Combination no. : 9 400 087 358
Injection pump
Pump designation : PES4P100A720LS510
EP type number : 9 400 087 058
Governor
Governor design. : RQV350/840...900PA83
Governor no. : 9 420 080 233

Customer-spec. information
Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 149.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

F06

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 950
travel mm : 8.50...8.60
2nd speed rpm : 350
travel mm : 0.50...1.50
3rd speed rpm : 500
travel mm : 2.40...2.60
4th speed rpm : 750
travel mm : 2.40...2.60
5th speed rpm : 850
travel mm : 4.00...4.50

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 925
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900

Del.quantity : 203.0...205.0
1000 : (200.5...207.5)
Spread cm3 : 3.50
1000 : (6.00)

APPLICATION
Generator

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.90
Speed rpm : 910...920
2nd rack travel in: 4.00
Speed rpm : 940...970
4th rack travel in: 1050
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 5...13

Testing:
Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 350
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 770...830

START CUT-OUT

Speed 1/min : 290 (310)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 910...920

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...215.0
1000 s: (191.0...219.0)
Rack travel in mm : 14.00...15.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0k13
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 365
 Injection pump
 Pump designation : PE6P120A32ORS3118
 EP type number : 0 411 826 726
 Governor
 Governor design. : RQV250...1025PA657-2
 Governor no. : 9 420 080 250

Customer-spec. information
 Customer : VOLVO

Engine : TD 121 F

1st version kW : 282.4
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

F08

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 3.3...3.5
 Del.quantity cm3/ : 1.8...2.3
 100 s: (-)
 Spread cm3 : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30
 2nd speed rpm : 500
 travel mm : 4.10...4.90
 3rd speed rpm : 700
 travel mm : 6.30...6.70
 4th speed rpm : 900
 travel mm : 6.30...6.70
 5th speed rpm : 1025
 travel mm : 7.30...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 238.5...240.5
1000 : (235.5...243.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 12.30
Speed rpm : 1085...1095
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 4.80
Speed rpm : 250
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00
Speed rpm : 285...345

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 780
Rack travel in m: 13.10...13.20
3rd pressure hPa : 200
Rack travel in m: 8.80...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: —
Speed rpm : 700
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...280.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.30...3.50
Del.quantity cm³/ : 18.0...23.0
1000 s: (-)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 b2
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 366
 Injection pump
 Pump designation : PES6P80A720LS425
 EP type number : 9 400 087 027
 Governor
 Governor design. : RQV300...1000PA798-7
 Governor no. : 9 420 080 248

Customer-spec. information
 Customer : CATERPILLAR

Engine : 3306NA

1st version kW : 93.2
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.95...2.05
 : (1.90...2.10)
 Rack travel in mm : 9.00...12.00

F10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 990

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 9.7...9.8

100 s: (9.5...9.9)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 0.8...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1010

travel mm : 8.40...8.60

2nd speed rpm : 325

travel mm : 0.50...2.00

3rd speed rpm : 400

travel mm : 2.70...3.10

4th speed rpm : 500

travel mm : 3.50...4.20

5th speed rpm : 800

travel mm : 6.10...6.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 990

Del.quantity : 97.0...98.0

1000 : (95.5...99.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 65...74

Testing:

1st rack travel in: 11.00

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1090...1120

4th rack travel in: 1180

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 200

Minimum rack travel: 11.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 490...550

CONSTANT REGULATION

Speed rpm : 220...370

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 990

Rack travel in m: 12.00...12.10

2nd speed rpm : 500

Rack travel in m: 12.70...12.80

3rd speed rpm : 700

Rack travel in m: 12.50...12.70

4th speed rpm : 850

Rack travel in m: 12.20...12.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 101.0...103.0

1000 s: (100.0...104.0)

Speed rpm : 700

Del.quantity cm3/ : 103.0...105.0

1000 s: (102.0...106.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 152.0...172.0

1000 s: (-)

Rack travel in mm : 17.60...18.60

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 q9
 Edition : 01.09.88
 Replaces : 24.7.87
 Test oil : ISO-4113

Combination no. : 9 400 087 368

Injection pump
 Pump designation : PE6P110A320RS3108V
 EP type number : 0 411 816 737
 Governor
 Governor design. : RQV250...1100PA589-1
 Governor no. : 9 420 080 166

Customer-spec. information
 Customer : VOLVO

Engine : THD 101 FD

1st version kW : 210.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 180.0...182.0

1000 : (177.0...185.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 12.70
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 250
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 345...405

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.90
2nd pressure hPa : 300
Rack travel in m: 10.00...10.10
3rd pressure hPa : 870
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

F13

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 i
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 087 375

Injection pump
Pump designation : PES6P110A720RS3194
EP type number : 9 400 087 055
Governor
Governor design. : RQV350...1300PA863-5
Governor no. : 9 420 080 240

Customer-spec. information
Customer : FORD FNH

Engine : 6.6 LTC

1st version kW : 126.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.05...4.15
: (4.00...4.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 8.50...8.60

2nd speed rpm : 1000
travel mm : 5.20...5.60

3rd speed rpm : 800
travel mm : 4.30...4.70

4th speed rpm : 500
travel mm : 2.60...3.00

5th speed rpm : 300
travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1540

Rack travel in mm : 8.00...0.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 800
Del.quantity : 117.0...119.0
1000 : (115.0...121.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:

1st rack travel in: 13.60
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 12.00
Speed rpm : 350
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 430...500

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.60...12.70
2nd pressure hPa : 580
Rack travel in m: 13.40...13.60
3rd pressure hPa : 620
Rack travel in m: 14.00...14.10

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 900
Del.quantity cm3/ : 100.5...104.5
1000 s: (98.5...106.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 57.0...59.0
1000 s: (55.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.60...8.80
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 c 1
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 377
 Injection pump
 Pump designation : PES6P110A720RS3193
 EP type number : 9 400 087 057
 Governor
 Governor design. : RSV650...1250P8A530-
 1
 Governor no. : 9 420 082 324

Customer-spec. information
 Customer : FORD - FNH

Engine : 7.8 L

1st version kW : 165.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
 : (4.20...4.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:

1st rack travel in: 12.50
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1300...1320
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 6.0

Testing:

Speed rpm : 600
Minimum rack travel: 10.00
Speed rpm : 650
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 770...830

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1200
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 9.90...10.00
2nd pressure hPa : 600
Rack travel in m: 12.50...12.60
3rd pressure hPa : 400
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm³/ : 117.5...119.5
1000 s: (115.5...121.5)
Aneroid pressure h: -
Speed rpm : 1200

Del.quantity cm³/ : 79.0...81.0
1000 s: (77.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION
Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 c 2
 Edition : 01.09.88
 Replaces : 12.11.87
 Test oil : ISO-4113
 Combination no. : 9 400 087 378
 Injection pump
 Pump designation : PES6P110A72ORS3193
 EP type number : 9 400 087 057
 Governor
 Governor design. : RSV650...1250P8A530
 Governor no. : 9 420 082 325

Customer-spec. information
 Customer : FORD -FNH

Engine : 7.8 l
 1st version kW : 180.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 017
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
 : (4.20...4.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 14.60...14.70
 Del.quantity cm3/ : 15.5...15.7
 100 s: (15.3...15.9)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 650.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 1000
 Del.quantity : 155.0...157.0
 1000 : (153.0...159.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 13.60
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1305...1325
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 6.0

Testing:
Speed rpm : 600
Minimum rack travel: 10.00
Speed rpm : 650
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 770...830

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1000
Rack travel mm : 14.60...14.70

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 11.50...11.60
2nd pressure hPa : 600
Rack travel in m: 14.00...14.10
3rd pressure hPa : 400
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 131.0...135.0
1000 s: (129.0...137.0)
Aneroid pressure h: -
Speed rpm : 1200
Del.quantity cm3/ : 107.0...109.0
1000 s: (105.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION
Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 d
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 087 379

Injection pump
Pump designation : PES6P110A720RS3150
EP type number : 9 400 087 046
Governor
Governor design. : RQV350...1200PA863
Governor no. : 9 420 080 242

Customer-spec. information
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 138.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : —
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values —

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
: (4.20...4.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360
travel mm : 8.40...8.50

2nd speed rpm : 1000
travel mm : 5.50...5.90

3rd speed rpm : 800
travel mm : 4.40...4.80

4th speed rpm : 500
travel mm : 2.60...3.00

5th speed rpm : 300
travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200
Aneroid pressure h: 600
Del.quantity : 127.5...129.5
1000 : (125.5...131.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:

1st rack travel in: 12.00
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack trave: 12.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 13.00...13.10
2nd speed rpm : 750
Rack travel in m: 13.80...13.90
4th speed rpm : 975
Rack travel in m: 13.40...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

F21

1st pressure hPa : -
Rack travel in m: 12.20...12.30
2nd pressure hPa : 267
Rack travel in m: 12.60...12.70
3rd pressure hPa : 335
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 750
Del.quantity cm3/ : 115.0...119.0
1000 s: (113.0...121.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.5...76.5
1000 s: (72.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 23.0...27.0
1000 s: (20.5...29.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 e
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 087 380

Injection pump
Pump designation : PES6P110A720RS3151
EP type number : 9 400 087 047
Governor
Governor design. : RQV350...1200PA863-1
Governor no. : 9 420 080 243

Customer-spec. information
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
: (4.20...4.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 8.0...8.2
Del.quantity cm3/ : 2.6...3.0
100 s: (2.3...3.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360
travel mm : 8.40...8.50
2nd speed rpm : 1000
travel mm : 5.50...5.90
3rd speed rpm : 800
travel mm : 4.40...4.80
4th speed rpm : 500
travel mm : 2.60...3.00
5th speed rpm : 300
travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1440
Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200
Aneroid pressure h: 600
Del.quantity : 132.0...134.0
1000 : (130.0...136.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 12.30
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1390...1420
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack trave: 12.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 13.30...13.40
2nd speed rpm : 750
Rack travel in m: 14.00...14.10
4th speed rpm : 975
Rack travel in m: 13.80...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

F23

1st pressure hPa : -
Rack travel in m: 11.90...12.00
2nd pressure hPa : 420
Rack travel in m: 12.50...12.60
3rd pressure hPa : 505
Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 750
Del.quantity cm3/ : 116.0...120.0
1000 s: (114.0...122.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 70.0...72.0
1000 s: (68.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 26.0...30.0
1000 s: (23.5...32.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 d 1
 Edition : 01.09.88
 Replaces : 8.1.88
 Test oil : ISO-4113
 Combination no. : 9 400 087 381
 Injection pump
 Pump designation : PES6P110A720RS3150
 EP type number : 9 400 087 046
 Governor
 Governor design. : RQV350...1200PA863-3
 Governor no. : 9 420 080 244

Customer-spec. information
 Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 160.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
 : (4.20...4.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 8.0...8.2
 Del.quantity cm3/ : 2.3...2.7
 100 s: (2.1...2.9)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360
 travel mm : 8.40...8.50
 2nd speed rpm : 1000
 travel mm : 5.50...5.90
 3rd speed rpm : 800
 travel mm : 4.40...4.80
 4th speed rpm : 500
 travel mm : 2.60...3.00
 5th speed rpm : 300
 travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1440
 Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200
Aneroid pressure h: 600
Del.quantity : 125.5...127.5
1000 : (123.5...129.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.90
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack trave: 12.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.90...13.00
2nd speed rpm : 750
Rack travel in m: 14.00...14.10
4th speed rpm : 975
Rack travel in m: 13.50...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

F25

1st pressure hPa : -
Rack travel in m: 12.90...13.00
2nd pressure hPa : 333
Rack travel in m: 13.20...13.30
3rd pressure hPa : 380
Rack travel in m: 13.70...13.90

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 750
Del.quantity cm3/ : 117.0...121.0
1000 s: (115.0...123.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 84.0...86.0
1000 s: (82.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 23.0...27.0
1000 s: (21.0...29.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 e 1
 Edition : 01.09.88
 Replaces : 8.1.88
 Test oil : ISO-4113
 Combination no. : 9 400 087 382
 Injection pump
 Pump designation : PES6P110A720RS3151
 EP type number : 9 400 087 047
 Governor
 Governor design. : RQV350...1200PA863-2
 Governor no. : 9 420 080 245

Customer-spec. information
 Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 160.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
 : (4.20...4.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 2.4...2.8

100 s: (2.1...3.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360

travel mm : 8.40...8.50

2nd speed rpm : 1000

travel mm : 5.50...5.90

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 500

travel mm : 2.60...3.00

5th speed rpm : 300

travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200
Aneroid pressure h: 600
Del.quantity : 136.0...138.0
1000 : (134.0...140.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 12.70
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 12.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 13.70...13.80
2nd speed rpm : 750
Rack travel in m: 14.30...14.40
4th speed rpm : 975
Rack travel in m: 14.10...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 500

F27

1st pressure hPa : -

Rack travel in m: 12.40...12.50

2nd pressure hPa : 345

Rack travel in m: 12.90...13.00

3rd pressure hPa : 420

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

Speed rpm : 750

Del.quantity cm3/ : 119.0...123.0

1000 s: (117.0...125.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 76.5...78.5

1000 s: (74.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0

1000 s: (-)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm3/ : 24.0...28.0

1000 s: (21.5...30.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 e 2
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 087 383

Injection pump
Pump designation : PES6P110A720RS3151
EP type number : 9 400 087 047
Governor
Governor design. : RQV350...1200PA863-4
Governor no. : 9 420 080 246

Customer-spec. information
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 179.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
: (4.20...4.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 14.9...15.1

100 s: (14.7...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 8.0...8.2
Del.quantity cm3/ : 2.4...2.8
100 s: (2.1...3.0)

Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360
travel mm : 8.40...8.50

2nd speed rpm : 1000
travel mm : 5.50...5.90

3rd speed rpm : 800
travel mm : 4.40...4.80

4th speed rpm : 500
travel mm : 2.60...3.00

5th speed rpm : 300
travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200
Aneroid pressure h: 700
Del.quantity : 149.5...151.5
1000 : (147.5...153.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:

1st rack travel in: 13.50
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack trave: 12.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.50...14.60
2nd speed rpm : 750
Rack travel in m: 15.00...15.10
4th speed rpm : 975
Rack travel in m: 14.70...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

G01

1st pressure hPa : -
Rack travel in m: 12.10...12.20
2nd pressure hPa : 430
Rack travel in m: 13.30...13.40
3rd pressure hPa : 532
Rack travel in m: 14.30...14.50

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 128.0...132.0
1000 s: (126.0...134.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 72.0...74.0
1000 s: (70.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 24.0...28.0
1000 s: (21.5...30.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 k
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 385
Injection pump
Pump designation : PES6P80A720LS456
EP type number : 9 400 087 029
Governor
Governor design. : RQV350...1000PA798-8
Governor no. : 9 420 080 251

Customer-spec. information
Customer : CATERPILLAR

Engine : 3306 T

1st version kW : 112.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.65...1.75
: (1.60...1.80)
Rack travel in mm : 9.00...12.00

G02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 990

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 11.1...11.2

100 s: (10.9...11.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.9...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1010
travel mm : 8.40...8.60

2nd speed rpm : 325
travel mm : 0.50...2.00

3rd speed rpm : 400
travel mm : 2.70...3.10

4th speed rpm : 500
travel mm : 3.50...4.20

5th speed rpm : 800
travel mm : 6.10...6.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 990

Del.quantity : 111.0...112.0

1000 : (109.5...113.5)

Spread cm3 : 2.00

1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 65...74

Testing:

1st rack travel in: 11.50
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1220
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 510...570

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 990
Rack travel in m: 12.50...12.60
2nd speed rpm : 500
Rack travel in m: 13.50...13.60
3rd speed rpm : 700
Rack travel in m: 13.40...13.60
4th speed rpm : 850
Rack travel in m: 12.80...13.10

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 117.0...119.0
1000 s: (116.0...120.0)
Speed rpm : 700
Del.quantity cm³/ : 114.5...116.5
1000 s: (113.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 152.0...172.0
1000 s: (-)
Rack travel in mm : 17.60...18.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,6 c 1
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 386
Injection pump
Pump designation : PE6P110A72ORS476-1
EP type number : 9 400 087 056
Governor
Governor design. : RQ300/1000PA718-1
Governor no. : 9 420 080 255

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 355 LA

1st version kW : 253.5
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
: (3.30...3.50)
Rack travel in mm : 9.00...12.00

GO4

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 20.4...20.6

100 s: (20.1...20.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 204.0...206.0

1000 : (201.5...208.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00

Speed rpm : 1045...1065

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.1

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

Speed rpm : 300

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.00

2nd pressure hPa : 600

Rack travel in m: 12.80...13.00

3rd pressure hPa : 300

Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm³/ : 203.5...207.5

1000 s: (200.5...210.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 115.0...119.0

1000 s: (112.5...121.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

G05

Speed rpm : 1045...1065

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 200.0...220.0

1000 s: (196.0...224.0)

Rack travel in mm : 15.50...16.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 f
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 087 388

Injection pump
Pump designation : PES6P110A72ORS3215
EP type number : 9 400 087 060
Governor
Governor design. : RQV350...1200PA863-6
Governor no. : 9 420 080 257

Customer-spec. information
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 201.3
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.65...4.75
: (4.60...4.80)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 17.2...17.4

100 s: (17.0...17.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 6.4...6.6
Del.quantity cm³/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1360
travel mm : 8.40...8.50
2nd speed rpm : 1000
travel mm : 5.50...5.90
3rd speed rpm : 800
travel mm : 4.40...4.80
4th speed rpm : 500
travel mm : 2.60...3.00
5th speed rpm : 300
travel mm : 0.90...1.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1505
Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900

Del.quantity : 172.0...174.0
1000 : (170.0...176.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:
1st rack travel in: 12.30
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1395...1425
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 390...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 665
Rack travel in m: 12.50...12.60
3rd pressure hPa : 405
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

G07

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 145.5...149.5
1000 s: (143.5...151.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 75.5...77.5
1000 s: (73.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11, Du17
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 087 392

Injection pump
Pump designation : PE6P120A720RS7001
EP type number : 0 412 626 800
Governor
Governor design. : RSV350...1050P1/481-
2
Governor no. : 9 420 082 326

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 11

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

G08

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 2.6...3.0

100 s: (2.2...3.4)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 169.0...171.0

1000 : (166.0...174.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 10.20
Speed rpm : 1080...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1310
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 12.20...12.30
4th speed rpm : 850
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 185.0...191.0
1000 s: (182.0...194.0)
Speed rpm : 850
Del.quantity cm3/ : 172.0...178.0
1000 s: (169.0...181.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1080...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 26.0...30.0
1000 s: (22.0...34.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 b
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 093 226

Injection pump
Pump designation : PES6A80D410RS2755
EP type number : 9 400 093 005
Governor
Governor design. : RSV325...1150A1B1111
Governor no. : 9 420 092 009

Customer-spec. information
Customer : DEUTZ ARG.

Engine : F6L913

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 5.4...5.5

100 s: (5.2...5.6)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.9

100 s: (0.4...1.0)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 54.0...55.0

1000 : (52.5...56.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 8.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 28...36

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 325

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.30...9.40

2nd speed rpm : 500

Rack travel in m: 11.10...11.20

4th speed rpm : 800

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 61.5...63.5

1000 s: (59.5...65.5)

Speed rpm : 800

Del.quantity cm3/ : 56.5...58.5

1000 s: (54.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

Remarks:

: 302-2027

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 c
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 093 227
Injection pump
Pump designation : PES6A85D410RS2756
EP type number : 9 400 093 006
Governor
Governor design. : RSV325...1150A1B1111
Governor no. : 9 420 092 009

Customer-spec. information
Customer : DEUTZ ARG.

Engine : BF6L913

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000
Inlet press., bar : 1.00
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 003
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 1.90...2.00
(1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 11.30...11.40
Del.quantity cm³/ : 7.2...7.3
100 s: (7.0...7.5)
Spread cm³ : 0.3
100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.9...8.1
Del.quantity cm³/ : 0.9...1.3
100 s: (0.7...1.5)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 72.5...73.5
1000 : (70.5...75.5)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 10.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 7.99...8.10
Rack travel in mm : 2.00
Speed rpm : 540...610

TORQUE CONTROL

Torque control curve - 1st version..

1st speed rpm : 1150
Rack travel in m: 11.30...11.40
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
4th speed rpm : 800
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 78.5...80.5
1000 s: (76.0...83.0)
Speed rpm : 800
Del.quantity cm3/ : 75.5...77.5
1000 s: (73.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

: 302-2005

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 2
 Edition : 30.09.88
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 9 400 230 066
 Injection pump
 Pump designation : PES6A100D410RS2676
 EP type number : 9 410 230 023
 Governor
 Governor design. : RSV425...1100A2C2161
 -1L
 Governor no. : 9 420 234 133

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 2.1...2.5
 100 s: (1.8...2.7)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del.quantity : 99.0...101.0
 1000 : (97.0...103.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1145...1155

2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.60...10.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 173
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 500
Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 500
Speed rpm : 750
Del.quantity cm³/ : 116.0...119.0
1000 s: (113.5...121.5)
Speed rpm : 500
Del.quantity cm³/ : -
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)
Rack travel in mm : 19.40

HIGH IDLE

1st version
Speed rpm : 1195
Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Start-of-delivery mark = 15.5° after 1
start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a11
Edition : 01.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100AOC2190
-3R
Governor no. : 9 420 234 125

Customer-spec. information
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 112.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 95.5...97.5

1000 : (93.5...99.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 9.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 445...505

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before
shutoff.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 d
Edition : 01.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 096

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV425...9D0A4C2213-1R
Governor no. : 9 420 234 136

Customer-spec. information
Customer : C.D.C.

Engine : 6 CTI-8.3 L

1st version kW : 154.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 830
Del.quantity : 135.0...137.0
1000 : (133.0...139.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:
1st rack travel in: 12.40
Speed rpm : 925...935

2nd rack travel in: 4.00
Speed rpm : 960...990
4th rack travel in: 1030
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 435...495

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C # 3908844

Set shutoff stop 1.5...2.0 mm before
shutoff.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1
APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a12
Edition : 01.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump
Pump designation : PES6A1000320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A0C2190
-8R
Governor no. : 9 420 234 137

Customer-spec. information
Customer : C.D.C.

Engine : 6 CT 8.3 L

1st version kW : 156.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

G20

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 122.5...124.5
1000 : (120.5...126.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 40...48

Testing:

1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

rotation angle after start of delivery,
cylinder 1

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 445...505

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: C.D.C. # 3911952

Set shutoff stop 1.5...2.0 mm before
shutoff.

Start-of-delivery mark at 10° cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a13
Edition : 01.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1050A0C2190
-10R
Governor no. : 9 420 234 142

Customer-spec. information
Customer : C.D.C.

Engine : 6 CI 8.3 L

1st version kW : 89.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 82.0...84.0
1000 : (80.0...86.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 41...49

Testing:

1st rack travel in: 8.60
Speed rpm : 1095...1105

2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1200
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 9.60...9.70
2nd speed rpm : 750
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911957

Set shutoff stop 1.5...2.0 mm before shutoff.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 3
Edition : 30.09.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 9 400 230 107

Injection pump
Pump designation : PES6A100D320/3RS2691
-2
EP type number : 9 410 230 028
Governor
Governor design. : RQV350...1200AB1233R
Governor no. : 9 420 231 018

Customer-spec. information
Customer : C.D.C

Engine : 6CT830

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 172...175

Orifice plate
diameter mm : 0,6

Test lines : 9 681 271 029

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 4.6...4.8
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.00...0.20
2nd speed rpm : 350
travel mm : 1.00...1.50
3rd speed rpm : 450
travel mm : 1.90...2.40
4th speed rpm : 1200
travel mm : 6.90...6.90
5th speed rpm : 1350
travel mm : 8.15...8.65

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1435
Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200

Aneroid pressure h: 700
Del.quantity : 113.0...115.0
1000 : (111.0...117.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 40...46

Testing:
1st rack travel in: 9.80
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...15
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 480...540

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 240
Rack travel mm : 9.70...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 333
Rack travel in m: 10.20...10.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 84.5...88.5
1000 s: (82.5...90.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 6
Edition : 30.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 109

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 030
Governor
Governor design. : RSV400...1100A02C219
0-21R
Governor no. : 9 420 234 164

Customer-spec. information
Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 7.8...8.0
Del.quantity cm3/ : 3.2...3.6
100 s: (3.0...3.8)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 7.80...8.00
Rack travel in mm : 2.00
Speed rpm : 515...575

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.20...10.30
2nd speed rpm : 750
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 90.5...94.5
1000 s: (88.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.80...8.00
Del.quantity cm3/ : 32.5...36.5
1000 s: (30.5...38.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911541

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Start-of-delivery mark 11° cam angle L
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 7
Edition : 30.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump
Pump designation : PES6A100D320/3RS2691
-4

EP type number : 9 410 230 030
Governor
Governor design. : RSV400...1100A0C2190
-22R
Governor no. : 9 420 234 173

Customer-spec. information
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 8.2...8.4
Del.quantity cm3/ : 3.2...3.6
100 s: (3.0...3.9)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 118.5...120.5
1000 : (116.5...122.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 8.20...8.40
Rack travel in mm : 2.00
Speed rpm : 565...625

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 133.0...137.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 8.20...8.40

Del.quantity cm³/ : 32.5...36.5
1000 s: (30.0...39.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911542
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Set shutoff stop 1.5...2.0 mm before l
shutoff. tainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 8
Edition : 30.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump
Pump designation : PES6A100D320/3RS2691
-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV400...1100A0C2190
-23R

Governer no. : 9 420 234 174

Customer-spec. information

Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 7.4...7.6
Del.quantity cm3/ : 2.8...3.2
100 s: (2.5...3.4)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 101.0...103.0
1000 : (99.0...105.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 29...37
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 750
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 110.5...114.5
1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.40...7.60

Del.quantity cm³/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911545
Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Start-of-delivery mark 11° cam angle 1
after start of delivery cyl. 1

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a10
Edition : 01.09.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 9 400 230 115

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1250AOC2190
-24R
Governor no. : 9 420 234 178

Customer-spec. information
Customer : C.D.C.

Engine : 6 CTA 8.3L

1st version kw : 131.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 9 680 271 029

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

H04

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.2...1.6
100 s: (0.9...1.8)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Del.quantity : 99.9...101.0
1000 : (97.0...103.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:

1st rack travel in: 9.90
Speed rpm : 1305...1315
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 470...530

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1305...1315

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: C.D.C. # 3913329

Set shutoff stop 1.5...2.0 mm before
shutoff.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 9
Edition : 01.09.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 9 400 230 116

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1050A0C2190
-25R
Governor no. : 9 420 234 182

Customer-spec. information
Customer : C.D.C.

Engine : 6 CT 8.3 L

1st version kW : 154.4
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 9 681 271 029

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

H06

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
3rd rack travel in: 4.00
Speed rpm : 1140...1270
4th rack travel in: 1200
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 440...500

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911955

Set shutoff stop 1.5...2.0 mm before
shutoff.

Start-of-delivery mark at 10° cam

H07

rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 6
Edition : 30.09.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 9 400 230 117

Injection pump
Pump designation : PES6A95D410RS2522-2
EP type number : 9 410 230 032
Governor
Governor design. : RSV425...1100A2C2161
-3L
Governor no. : 9 420 234 183

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466TR20

1st version kW : 110.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 125...145

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95
: (1.80...2.00)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.80...8.90

Del.quantity cm3/ : 8.7...8.9
100 s: (8.5...9.1)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 4.8...5.0
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 600
Del.quantity : 87.5...89.5
1000 : (85.5...91.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 48...56

Testing:
1st rack travel in: 7.80
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1190...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.30

LOW IDLE 1
Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 565...625

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 8.80...8.90
2nd speed rpm : 700
Rack travel in m: 9.90...10.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 240
Rack travel mm : 9.60...9.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 200
Rack travel in m: 9.10...9.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 700
Del.quantity cm3/ : 98.5...101.5
1000 s: (96.0...104.0)
Aneroid pressure h: -

HD9

Speed rpm : 500
Del.quantity cm3/ : -
1000 s: (72.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.80
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: JOHN DEERE # RE32013

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Magnet. d delivery with torque-control
pring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 16° cam angle
after start of delivery cyl. 1

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 7
Edition : 30.09.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 9 400 230 118

Injection pump
Pump designation : PES6A95D41ORS2522-2
EP type number : 9 410 230 032
Governor
Governor design. : RSV425...1100A2C2161
-4L

Governer no. : 9 420 234 184

Cust. part no. : RE31629

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466TRW-06

1st version kW : 98.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 135...155

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,7

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95
: (1.80...2.00)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.20...8.30

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 7.20
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1190...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.30

LOW IDLE 1

Control lever
position degrees: 27...35
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 8.20...8.30
2nd speed rpm : 700
Rack travel in m: 9.20...9.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 213
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 193
Rack travel in m: 8.80...9.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600

H11

Speed rpm : 700
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : -
1000 s: (69.5...77.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.20
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE31629

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Magnet.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 16° cam angle
after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 4
 Edition : 01.09.88
 Replaces : 14.1.88
 Test oil : ISO-4113
 Combination no. : 9 400 230 119
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...1250AB1235R
 Governor no. : 9 420 231 020

Customer-spec. information
 Customer : C.D.C

Engine : 6 CT - 830

1st version kW : 157.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

H13

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 8.40...8.50
 2nd speed rpm : 1500
 travel mm : 9.10...9.30
 3rd speed rpm : 350
 travel mm : 0.70...1.10
 4th speed rpm : 450
 travel mm : 1.60...2.00
 5th speed rpm : 250
 travel mm : 0.10...0.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1550
 Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250

Aneroid pressure h: 700
Del.quantity : 114.5...116.5
1000 : (112.5...118.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 40...48

Testing:
1st rack travel in: 10.40
Speed rpm : 1300...1310
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1525
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 250
Minimum rack travel: 7.80
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.40...11.50
2nd speed rpm : 750
Rack travel in m: 11.90...12.00
3rd speed rpm : 1200
Rack travel in m: 11.40...11.50
4th speed rpm : 1000
Rack travel in m: 11.90...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10

H14

2nd pressure hPa : 190
Rack travel in m: 9.70...9.80
3rd pressure hPa : 350
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 118.0...122.0
1000 s: (116.0...124.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.5...65.5
1000 s: (59.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1300...1310

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 14.60...14.80

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: C.D.C. # 3912636

Start-of delivery mark/lock = 7.5°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 5,9 b
 Edition : 30.09.88
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 9 400 230 120
 Injection pump
 Pump designation : PES6A95D32ORS2750
 EP type number : 0 410 896 906
 Governor
 Governor design. : RQV350...1350AB1236R
 Governor no. : 9 420 231 021

Customer-spec. information
 Customer : NAVISTAR

Engine : MARS DTA360

1st version kW : 134.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.1...7.3

100 s: (6.9...7.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del.quantity cm³/ : 1.3...1.7
 100 s: (1.0...1.9)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 8.50...8.50
 2nd speed rpm : 1500
 travel mm : 9.30...9.50
 3rd speed rpm : 350
 travel mm : 1.00...1.00
 4th speed rpm : 450
 travel mm : 1.90...2.40
 5th speed rpm : 250
 travel mm : 0.10...0.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1535
 Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900

Del.quantity : 71.0...73.0
1000 : (69.0...75.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Testing:
1st rack travel in: 10.00
Speed rpm : 1405...1435
2nd rack travel in: 4.00
Speed rpm : 1520...1530
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 250
Minimum rack travel: 7.80
Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.90

Measurement
Speed 1/min : 500

1st pressure hPa : 305
Rack travel in m: 10.30...10.70
2nd pressure hPa : 175
Rack travel in m: 9.30...9.40
3rd pressure hPa : 900
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 55.5...59.5
1000 s: (53.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1405...1435

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (120.0...150.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 a3
 Edition : 30.09.88
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 9 400 231 039
 Injection pump
 Pump designation : PES6P110A720RS370
 EP type number : 0 412 016 052
 Governor
 Governor design. : RSV450...1050POA465
 Governor no. : 9 420 234 180

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6619A

1st version kW : 201.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50

H17

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.9...2.5

100 s: (1.7...2.7)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1205...1235
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 580...640

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.40...12.50
2nd speed rpm : 650
Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 280
Rack travel in m: 11.70...11.80
2nd pressure hPa : 480
Rack travel in m: 12.80...13.20
3rd pressure hPa : 900
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm³/ : 198.5...201.5
1000 s: (195.0...205.0)
Aneroid pressure h: -
Speed rpm : 500
1000 s: (123.0...133.0)

BREAKAWAY

H18

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (165.0...215.0)
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 1170
Rack travel in mm : 7.40...7.60

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 19.0...25.0
1000 s: (17.0...27.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE29146

Magnet.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
Screw in torque-control-spring
retainer to make contact at 650 l/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 g 3
 Edition : 30.09.88
 Replaces : 7.86
 Test oil : ISO-4113
 Combination no. : 9 400 231 084
 Injection pump
 Pump designation : PES6P110A720RS3083-1
 EP type number : 9 410 231 027
 Governor
 Governor design. : RSV425...1100P2A489
 Governor no. : 9 420 234 138

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 A

1st version kW : 161.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 456 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 10.50

H19

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 425.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.5

100 s: (0.8...1.8)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 137.5...139.5

1000 : (134.5...142.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 11.00

Speed rpm : 1155...1165

2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 655...715

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.40...11.80
2nd pressure hPa : 375
Rack travel in m: 12.50...12.60
3rd pressure hPa : 900
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 155.5...159.5
1000 s: (152.5...162.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : -
1000 s: (102.0...112.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 1200
Rack travel in mm : 7.30...7.50

LOW IDLE

Speed rpm : 425
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.5...15.5
1000 s: (8.0...18.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE23748

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
Magnet. d delivery with torque-control
pring retainer.

Starting/full-load transition speed
from holding magnet = 400 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 e
Edition : 11.1.89
Replaces : -
Test oil : ISO-4113

Combination no. : 9 407 083 255

Injection pump
Pump designation : PES4A80D320RS1282
Governor
Governor design. : RSV350...1500A2B2077
R

Customer-spec. information
Customer : MWM

Engine : D 226-4

1st version kW : 59.0
Rated speed : 3000

TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2,2...2,3
: (2,15...2,35)
Rack travel in mm : 9,00
Firing order : 1-3-4-2

Phasing : 0-90-120-180
Tolerance + - ° : 0,50(0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10,50
& maximum rack tra: 21,00
Difference ° CS : 4...5

BASIC SETTING

1st speed rpm : 1500
Rack travel in mm : 9,55...9,65
Del.quantity cm3/ : 5,55...5,65
100 s: (5,35...5,85)

Spread cm3 : 0,20
100 s: (0,35)

2nd speed rpm : 350
Rack travel in mm : 6,90...7,10
Del.quantity cm3/ : 0,85...1,25
100 s: (0,55...1,55)
Spread cm3 : 0,2
100 s: (0,35)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0,3...1,0

Governor spring pre-tension
Click setting x : 5,25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1500
Del.quantity : 55,5...56,5
1000 : (54,0...58,0)
Spread cm3 : 2,5
1000 : (4,0)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 8,60
Speed rpm : 1540...1550
2nd rack travel in: 4,00
Speed rpm : 1590...1620
3rd rack travel in: 0,30...1,70

Speed rpm : 1740

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5,50

Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 350

Rack travel in mm : 5,90...6,10

Rack travel in mm : 2,00

Speed rpm : 580...640

Speed rpm : 800

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 9,55...9,65

2nd speed rpm : 1000

Rack travel in m: 9,75...10,05

3rd speed rpm : 800

Rack travel in m: 10,05...10,25

4th speed rpm : 500

Rack travel in m: 10,30...10,40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del.quantity cm3/ : 53,5...55,5

1000 s: (53,0...56,0)

Spread cm3 : 3,5

1000 s: (4,5)

Speed rpm : 800

Del.quantity cm3/ : 51,5...53,5

1000 s: (51,0...54,0)

Spread cm3 : 3,5

1000 s: (4,5)

Speed rpm : 500

Del.quantity cm3/ : 48,0...50,0

1000 s: (47,5...50,5)

Spread cm3 : 3,5

1000 s: (4,5)

BREAKAWAY

1st version

Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100

H22

Del.quantity cm3/ : 90,0...130,0

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5,40...5,60

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 1,5 A
Edition : 16.01.89
replaces : 04.86
Calibrating oil : ISO 4113

Injection pump : VE 3/10F2100 L227
Type number : 0 460 403 008

Customer-specific information
Customer : MOTORI VM

Engine : HR 392 HT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Charge press. hPa: 800
Setting value mm: 1,0...1,4

Supply-pump pressure:

Speed 1/min: 1000
Charge press. hPa: 800
Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del.quantity cm3/
1000H.: 58,5...59,5
Dispersion cm3/ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 48,5...49,5

Low-idle speed regulation:

Speed 1/min: 460
Charge press. hPa: -
Del.quantity cm3/
1000H.: 9,5...13,5
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2250
Charge press. hPa: 800
Del.quantity cm3/
1000H: 32,5...38,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 1,0...1,4
mm: (0,5...1,9)
2nd speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: 4,3...5,1
mm: (4,0...5,4)
3rd speed 1/min: 1900
Charge press. hPa: 800
TD travel mm: 6,9...7,7
mm: (6,6...8,0)
4th speed 1/min: 2100

Charge press. hPa: 800
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 800
Supply-pump pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Charge press. hPa: 800
Supply-pump pressure bar: 3,2...3,8
3rd speed 1/min: 2100
Charge press. hPa: 800
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 800
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 7,5
Del.quantity cm³/: 52,5...53,5
1000H.: (50,5...55,5)
2nd speed 1/min: 2450
Charge press. hPa: 800
Del.quantity cm³/: 0,0...6,0
1000H.: -
3rd speed 1/min: 2330
Charge press. hPa: 800
Del.quantity cm³/: 21,5...29,5
1000H.: (20,0...31,0)
4th speed 1/min: 2250
Charge press. hPa: 800
Del.quantity cm³/: 32,5...38,5
1000H.: (31,5...39,5)
5th speed 1/min: 2100
Charge press. hPa: 800
Del.quantity cm³/: 49,8...52,2
1000H.: (48,7...53,3)
6th speed 1/min: 1500
Charge press. hPa: 800
Del.quantity cm³/: 58,5...59,5
1000H.: (57,0...61,0)
7th speed 1/min: 750
Charge press. hPa: 800

Del.quantity cm³/: 55,5...58,5
1000H.: (54,5...59,5)
8th speed 1/min: 750
Del.quantity cm³/: 48,5...49,5
1000H.: (46,5...51,5)
9th speed 1/min: 600
Del.quantity cm³/: 45,5...47,5
1000H.: (43,5...49,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 460
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 460
Del.quantity cm³/: 9,5...13,5
1000H.: (7,5...15,5)
2nd speed 1/min: 500
Del.quantity cm³/: 3,5...9,5
1000H.: (1,5...11,5)
3rd speed 1/min: 600
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H.: 37,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,7...6,0
MS	mm	:	0,7...0,9
SVS max.	mm	:	6,0
XK	mm	:	17,0...19,0
XL	mm	:	9,9...13,3

Remarks:

Correction at adjusting nut (46)

Operate control lever after each

manifold-pressure compensator pressure
change.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : BMW 2,4 A
Edition : 17.01.89
replaces : 19.12.86
Calibrating oil : ISO 4113

Injection pump : VE 6/10F2400 R121
Type number : 0 460 406 022

Customer-specific information
Customer : BMW

Engine : M21D24

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1050
Setting value mm: 4,1...4,5
KSB solenoid-operated
valve volt: -

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1050

H26

Setting value bar: 6,1...6,5
KSB solenoid-operated
valve volt: -

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1050
Del.quantity cm3/
1000H.: 40,0...41,0
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 3,0
1000H.: -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 27,5...28,5
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 3,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del.quantity cm3/
1000H.: 6,0...10,0
KSB solenoid-operated
valve volt: -

Full-load speed regulation:

Speed 1/min: 2600
Charge press. hPa: 1050
Del.quantity cm3/
1000H.: 17,0...23,0
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 5,0
1000H.: -

Start:

Speed 1/min: 250
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 36,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1050

TD travel mm: 1,9...2,9
mm: (1,7...3,1)

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1000

Charge press. hPa: 1050

TD travel mm: 3,7...4,7
mm: (3,5...4,9)

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 750

Charge press. hPa: 1050

TD travel mm: 1,3...2,1
mm: (1,0...2,4)

KSB solenoid-operated

valve volt: -

4th speed 1/min: 1500

Charge press. hPa: 1050

TD travel mm: 4,1...4,5
mm: (3,6...5,0)

KSB solenoid-operated

valve volt: -

5th speed 1/min: 2300

Charge press. hPa: 1050

TD travel mm: 7,4...8,2
mm: (7,1...8,5)

KSB solenoid-operated

valve volt: -

Supply-pump pressure characteristic:

1st speed 1/min: 500

Charge press. hPa: 1050

Supply-pump
pressure bar: 3,2...3,6

KSB solenoid-operated

valve volt: -

2nd speed 1/min: 1500

Charge press. hPa: 1050

Supply-pump
pressure bar: 6,1...6,5

KSB solenoid-operated

valve volt: -

3rd speed 1/min: 2300

Charge press. hPa: 1050

Supply-pump
pressure bar: 8,1...8,5

KSB solenoid-operated

valve volt: -

Overflow quantity at overflow valve:

1st speed 1/min: 500

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2400

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Overflow : 55...138

quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750

Charge-air pressure-setting

point hPa: 250

LDA stroke mm: 4,3

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 33,5...34,5
1000H.: (31,7...36,3)

2nd speed 1/min: 2700

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 7,0...13,0
1000H.: (6,0...14,0)

3rd speed 1/min: 2600

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)

4th speed 1/min: 2400

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 40,5...42,5
1000H.: (39,2...43,8)

5th speed 1/min: 1500

Charge press. hPa: 1050

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 40,0...41,0
1000H.: (38,2...42,8)

6th speed 1/min: 750

Charge press. hPa: 250

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 33,5...34,5
1000H.: (31,7...36,3)

7th speed 1/min: 500

Charge press. hPa: -

KSB solenoid-operated

valve volt: -

Del.quantity cm³/: 27,5...28,5
1000H.: (25,7...30,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2400

Del.quantity cm³/: -

1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 475
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 100
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 27,0...37,0
ind. 1000H: -

2nd speed 1/min: 400
Del.quantity cm³/: 32,0...42,0
max. 1000H: -

3rd speed 1/min: 480
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 25,2...29,8
1000H: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 6,3...6,6
MS mm : 1,5...1,7
SVS max. mm : 4,0
XK mm : 20,2...22,2
XL mm : 9,5...12,8

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 B
Edition : 13.01.89
replaces : 18.11.88
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288
Type number : 0 460 414 051

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,55
mm: 0,50...0,60

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

JO1

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H: 29,5...33,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)

2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,2)

3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7

2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4

3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2

4th speed 1/min: 1950
Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm3/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm3/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm3/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm3/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm3/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm3/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm3/: 33,8...34,8 E
1000H.: (31,8...36,8) E
8th speed 1/min: 500
Del.quantity cm3/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm3/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm3/: 7,5...15,5
1000H.: (5,5...17,5)

Automatic starting fuel delivery:

1st speed 1/min: 300

Del.quantity cm3/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm3/: -
max. 1000H: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : K-OT
MS mm : 1,0...1,4
SVS max. mm : 3,8
XK mm : 17,0...19,0
XL mm : 10,9...14,5

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.50...
0.60 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 C
Edition : 13.01.89
replaces : 18.11.88
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288-1
Type number : 0 460 414 052

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,55
mm: 0,50...0,60
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H.: 30,5...34,5
Dispersion cm3/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,2)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 30,5...34,5
1000H.: (27,5...37,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 37,7...41,3
1000H.: (37,0...42,0)
7th speed 1/min: 1000
Del.quantity cm³/: 34,8...35,8 E
1000H.: (32,8...37,8) E
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 16,0...20,0
1000H.: (14,0...22,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-

speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H : 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.50...
0.60 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 D
Edition : 13.01.89
replaces : 18.11.88
Calibrating oil : ISO 4113
Injection pump : VE 4/11F2000 R288-2
Type number : 0 460 414 055

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,55
mm: 0,50...0,60
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H.: 29,5...33,5
Dispersion cm3/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,1)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm3/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm3/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm3/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm3/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm3/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm3/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm3/: 33,8...34,8 E
1000H.: (31,8...36,8) E
8th speed 1/min: 500
Del.quantity cm3/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm3/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm3/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-

speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm3/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm3/: -
ind. 1000H.: 30,0

2nd speed 1/min: 480
Del.quantity cm3/: -
max. 1000H.: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Pump/engine assignment:

Stroke in blocking position 0.50...
0.60 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 E
Edition : 13.01.89
replaces : 18.11.88
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288-3
Type number : 0 460 414 062

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Start of delivery block
Piston stroke mm : 0,55
mm : 0,50...0,60
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H.: 29,5...33,5
Dispersion cm3/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,1)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm³/: 33,8...34,8 E
1000H.: (31,8...36,8) E
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-

speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H : 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Pump/engine assignment:
Stroke in blocking position 0.50...
0.60 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 L
Edition : 18.01.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1350 R330
Type number : 0 460 424 050

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.45.261

Power k: 75

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): ±0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 2,8...3,2

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 6,4...7,0

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 109,5...110,5
Dispersion cm3/ : 5,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 66,5...67,5

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del.quantity cm3/
1000H.: 22,0...26,0

Full-load speed regulation:

Speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 0,0...3,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 75,0

Load-dependent start of delivery:

Speed 1/min: 1200
Charge press. hPa: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1050
Charge press. hPa: 1000
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 2,8...3,2
mm: (2,3...3,7)

3rd speed 1/min: 1350
Charge press. hPa: 1000
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,6...4,2
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 6,4...7,0
3rd speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 350
LDA stroke mm: 6,3
Del.quantity cm³/: 86,0...87,0
1000H.: (83,0...90,0)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 35,0...41,0
1000H.: (32,0...44,0)
4th speed 1/min: 1320
Charge press. hPa: 1000
Del.quantity cm³/: 105,5...109,5
1000H.: (104,5...110,5)
5th speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm³/: 109,5...110,5
1000H.: (107,0...113,0)
6th speed 1/min: 500
Charge press. hPa: 350
Del.quantity cm³/: 86,0...87,0
1000H.: (83,0...90,0)
7th speed 1/min: 500

Charge press. hPa: -
Del.quantity cm³/: 66,5...67,5
1000H.: (64,0...70,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1350
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm³/: 22,0...26,0
1000H.: (19,0...29,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H.: 37,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,3...5,7
MS mm : 0,8...1,0
XK mm : 20,0...22,0
XL mm : 15,0...18,4

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS 6,0 A
Edition : 18.01.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1400 R325
Type number : 0 460 426 117

Customer-specific information
Customer : NISSAN

Engine : M 36 TC 125K

Power k: 125
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value bar: 6,7...7,3

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 105,0...115,0
Dispersion cm3/ : 5,0
1000H : (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 76,0...77,0

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 15,5...19,5
Dispersion cm3/ : 5,0
1000H.: (5,0)

Full-load speed regulation:

Speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 42,0...48,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 120,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 0,4...1,2
mm: (0,1...1,5)
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2,0...2,4
mm: (1,5...2,9)
3rd speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,3...4,9
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6,7...7,3
 3rd speed 1/min: 1400
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8,2...8,8

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow quantity cm3/10s: (41...83)
 2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Overflow quantity cm3/10s: (55...138)
 3rd speed 1/min: 1400
 Charge press. hPa: 1000
 Overflow quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 350
 LDA stroke mm: 7,2
 Del.quantity cm3/1000H.: (92,5...93,5)
 2nd speed 1/min: 1700
 Charge press. hPa: 1000
 Del.quantity cm3/1000H.: (0,0...6,0)
 3rd speed 1/min: 1600
 Charge press. hPa: 1000
 Del.quantity cm3/1000H.: (42,0...48,0)
 4th speed 1/min: 1400
 Charge press. hPa: 1000
 Del.quantity cm3/1000H.: (94,0...97,0)
 5th speed 1/min: 800
 Charge press. hPa: 1000
 Del.quantity cm3/1000H.: (105,0...115,0)
 6th speed 1/min: 800
 Charge press. hPa: 350
 Del.quantity cm3/1000H.: (92,5...93,5)
 7th speed 1/min: 800
 Del.quantity cm3/1000H.: (76,5...79,5)
 8th speed 1/min: 500
 Charge press. hPa: 1000

Del.quantity cm3/1000H.: (107,5...110,5)
 9th speed 1/min: 500
 Del.quantity cm3/1000H.: (76,0...77,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
 Del.quantity cm3/1000H.: 0...3

Electr. shutoff:

Speed 1/min: 350
 ELAB volt: -
 Del.quantity cm3/1000H.: (0,0...3,0)

Idle delivery:

1st speed 1/min: 350
 Del.quantity cm3/1000H.: (15,5...19,5)
 2nd speed 1/min: 400
 Del.quantity cm3/1000H.: (3,0...9,0)
 3rd speed 1/min: 450
 Del.quantity cm3/1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 200
 Del.quantity cm3/ind. 1000H.: 95,0
 2nd speed 1/min: 300
 Del.quantity cm3/ind. 1000H.: 75,0

Shutoff electromagnet:

Cut-in min. voltage : 20,0
 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
 K mm : 3,5...3,9
 KF mm : KOT
 MS mm : 1,1...1,5

Remarks:
 Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,5 R
Edition : 18.01.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1350 R329
Type number : 0 460 426 119

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.25.221

Power k: 110

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 7,7...8,3

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 103,5...104,5
Dispersion cm3/ : 5,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 66,6...67,5

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm3/
1000H.: 13,0...17,0
Dispersion cm3/: 3,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 37,0...43,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 75,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,0...3,4
mm: (2,5...3,9)

3rd speed 1/min: 1350
Charge press. hPa: 1000
TD travel mm: 3,6...4,4
mm: (3,3...4,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,0...5,6
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 6,6...7,2
3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 7,7...8,3
4th speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 8,3...8,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 500
LDA stroke mm: 4,8
Del.quantity cm³/: 81,0...82,0
1000H.: (78,5...84,5)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 37,0...43,0
1000H.: (34,0...46,0)
4th speed 1/min: 1350
Charge press. hPa: 1000
Del.quantity cm³/: 99,0...102,0
1000H.: (97,5...103,5)
5th speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm³/: 103,5...104,5
1000H.: (101,0...107,0)
6th speed 1/min: 800

Charge press. hPa: 1000
Del.quantity cm³/: 98,5...101,5
1000H.: (97,0...103,0)
7th speed 1/min: 500
Charge press. hPa: 500
Del.quantity cm³/: 81,0...82,0
1000H.: (78,5...84,5)
8th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 66,5...67,5
1000H.: (64,0...70,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1350
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 13,0...17,0
1000H.: (10,0...20,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm³/: -
ind. 1000H.: 85,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H.: 47,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4
MS mm : -
SVS max. mm : -

Remarks:

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,5 R1
Edition : 18.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1350 R329-1
Type number : 0 460 426 120

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.25.221

Power k: 91

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 7,7...8,3

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 96,0...97,0
Dispersion cm3/ : 5,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 66,6...67,5

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm3/
1000H.: 13,0...17,0
Dispersion cm3/ : 3,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 37,0...43,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 75,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,0...3,4
mm: (2,5...3,9)

3rd speed 1/min: 1350
Charge press. hPa: 1000
TD travel mm: 3,6...4,4
mm: (3,3...4,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,0...5,6
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 6,6...7,2
3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 7,7...8,3
4th speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 8,3...8,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 500
LDA stroke mm: 3,0
Del.quantity cm³/: 81,0...82,0
1000H.: (78,5...84,5)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 37,0...43,0
1000H.: (34,0...46,0)
4th speed 1/min: 1350
Charge press. hPa: 1000
Del.quantity cm³/: 92,5...95,5
1000H.: (91,0...97,0)
5th speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm³/: 96,0...97,0
1000H.: (93,5...99,5)
6th speed 1/min: 800

Charge press. hPa: 1000
Del.quantity cm³/: 90,5...93,5
1000H.: (89,0...95,0)
7th speed 1/min: 500
Charge press. hPa: 500
Del.quantity cm³/: 81,0...82,0
1000H.: (78,5...84,5)
8th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 66,5...67,5
1000H.: (64,0...70,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1350
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 13,0...17,0
1000H.: (10,0...20,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm³/: -
ind. 1000H.: 85,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H.: 47,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,0...5,4
MS mm : -
SVS max. mm : -

Remarks:

Correction at adjusting nut (46)

—

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 H1
Edition : 18.01.89
replaces : -
Calibrating oil : ISO4113

Injection pump : VE 4/ 8F2300 R334
Type number : 0 460 484 024

Customer-specific information
Customer : FIAT—TIPO

Engine : M 705

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 5,9...6,3

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 33,0...34,0
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 390
Del.quantity cm3/
1000H.: 8,0...12,0
Dispersion cm3/: 2,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 2500
Del.quantity cm3/
1000H.: 20,0...26,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 37,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
2nd speed 1/min: 1500
TD travel mm: 5,9...6,3
mm: (5,4...6,8)
3rd speed 1/min: 2000
TD travel mm: 8,7...9,5
mm: (8,4...9,8)
4th speed 1/min: 2300
TD travel mm: 9,4...10,2
mm: (9,1...10,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,9...3,5
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,5...6,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Del.quantity cm³/: 0,0...1,6
1000H.: -
2nd speed 1/min: 2650
Del.quantity cm³/: 2,0...10,0
1000H.: -
3rd speed 1/min: 2500
Del.quantity cm³/: 20,0...26,0
1000H.: (19,0...27,0)
4th speed 1/min: 2300
Del.quantity cm³/: 34,5...36,9
1000H.: (33,4...38,0)
5th speed 1/min: 2000
Del.quantity cm³/: 34,4...36,8
1000H.: (33,3...37,9)
6th speed 1/min: 1500
Del.quantity cm³/: 33,0...34,0
1000H.: (31,2...35,8)
7th speed 1/min: 1000
Del.quantity cm³/: 32,3...34,7
1000H.: -
8th speed 1/min: 600
Del.quantity cm³/: 33,0...36,0
1000H.: (31,5...37,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 390
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 390
Del.quantity cm³/: 8,0...12,0
1000H.: (5,0...15,0)
2nd speed 1/min: 440
Del.quantity cm³/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300

Del.quantity cm³/: -
ind. 1000H: 40,0

2nd speed 1/min: 400
Del.quantity cm³/: -
max. 1000H : 43,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,3...5,7
SVS max. mm : 1,3...1,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 E
Edition : 18.01.89
replaces : 02.04.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R95
Type number : 0 460 494 105

Customer-specific information
Customer : RENAULT

Engine : F & M

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400
Setting value mm: 4,1...4,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1400
Setting value bar: 4,9...5,5

KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 28,5...29,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 2550
Del.quantity cm3/
1000H.: 21,0...29,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 12,0

Load-dependent start of delivery:

Speed 1/min: 1400

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,7...1,5
mm: (0,4...1,8)

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1000
TD travel mm: 2,3...3,1
mm: (2,0...3,4)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1400
TD travel mm: 4,1...4,5
mm: (3,6...5,0)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2000
TD travel mm: 6,3...7,1
mm: (6,0...7,4)
KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2100
TD travel mm: 6,7...7,5
mm: (6,4...7,8)
KSB solenoid-operated
valve volt: 12,0
6th speed 1/min: 2400
TD travel mm: 7,0...7,7
mm: (6,6...8,0)
KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 300
TD travel mm: 2,0...4,0
mm: -

KSB solenoid-operated
valve volt: -

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2,5...3,1
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1400
Supply-pump pressure bar: 4,9...5,5
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2400
Supply-pump pressure bar: 7,7...8,3
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2850
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 0,0...7,0
1000H.: -
2nd speed 1/min: 2700
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,5...16,5
1000H.: (9,5...17,5)
3rd speed 1/min: 2550
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 21,0...29,0
1000H.: -
4th speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 29,7...32,3
1000H.: (28,7...33,3)
5th speed 1/min: 2100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 30,3...32,7
1000H.: (29,2...33,8)
6th speed 1/min: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 27,8...29,8
1000H.: (26,5...31,1)
7th speed 1/min: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 28,5...29,5
1000H.: (26,7...31,3)
8th speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 26,9...29,9
1000H.: (25,4...31,4)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,5...5,5
1000H.: (0,0...6,0)

3rd speed 1/min: 650
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 330
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
ind. 1000H: 30,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 31,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...5,9
MS	mm	: 1,2...1,4
SVS max.	mm	: 2,7
XK	mm	: 18,7...20,7
XL	mm	: 9,5...12,8

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E
Edition : 14.11.88
replaces : 06.07.88
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215
Type number : 0 460 494 174

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 0.90
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 30,8...31,8
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: 3,7...4,1
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
Del.quantity cm³/: 0,0...5,0
1000H.: (0,0...5,0)
2nd speed 1/min: 2735
Del.quantity cm³/: 5,0...11,0
1000H.: (4,0...12,0)
3rd speed 1/min: 2575
Del.quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del.quantity cm³/: 27,5...30,1
1000H.: (26,5...31,1)
5th speed 1/min: 1500
Del.quantity cm³/: 30,8...31,8
1000H.: (26,5...33,6)
6th speed 1/min: 600
Del.quantity cm³/: 23,3...26,3
1000H.: (21,8...27,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del.quantity cm³/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del.quantity cm³/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0
2nd speed 1/min: 400

Del.quantity cm³/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 17,0...19,0
XL	mm	: 10,6...14,0

Remarks:

XK = 15.65...17.65 mm
XL = 10.90...14.30 mm
(For installation of part-load governor 1 463 161 798 and engine-speed control lever 1 461 901 442).

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E1
Edition : 14.11.88
replaces : 06.07.88
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215-1
Type number : 0 460 494 175

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm : 0.90
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 30,8...31,8
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: 3,7...4,1
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 2950
Del.quantity cm³/: 0,0...5,0
1000H.: (0,0...5,0)
2nd speed 1/min: 2735
Del.quantity cm³/: 5,0...11,0
1000H.: (4,0...12,0)
3rd speed 1/min: 2575
Del.quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del.quantity cm³/: 27,5...30,1
1000H.: (26,5...31,1)
5th speed 1/min: 1500
Del.quantity cm³/: 30,8...31,8
1000H.: (26,5...33,6)
6th speed 1/min: 600
Del.quantity cm³/: 23,3...26,3
1000H.: (21,8...27,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del.quantity cm³/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del.quantity cm³/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0
2nd speed 1/min: 400

Del.quantity cm³/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 18,7...20,7
XL	mm	: 10,1...13,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6 A2
Edition : 19.12.88
replaces : 03.11.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R125-2
Type number : 0 460 494 186

Customer-specific information
Customer : FORD

Engine : 1,6 L.IDI IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,3...4,7
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,3...5,9

KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750
Del.quantity cm3/
1000H.: 28,8...29,8

KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 440
Del.quantity cm3/
1000H.: 7,0...11,0

KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 2675
Del.quantity cm3/
1000H.: 7,5...13,5

KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 50,0
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 2,2...4,2
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
TD travel mm: 1,3...2,1
mm: (1,0...2,4)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1500
TD travel mm: 4,3...4,7
mm: (3,8...5,2)

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 2000
TD travel mm: 6,8...7,6
mm: (6,5...7,9)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,1...3,7

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500

Supply-pump
pressure bar: 5,3...5,9

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2000

Supply-pump
pressure bar: 6,6...7,2

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2400

KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 0,0...2,0
1000H.: -

2nd speed 1/min: 2650

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 7,5...13,5
1000H.: (6,5...14,5)

3rd speed 1/min: 2550

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 18,5...26,5
1000H.: (17,5...27,5)

4th speed 1/min: 2400

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 27,2...29,2
1000H.: (26,0...30,4)

5th speed 1/min: 1750

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm³/: 28,8...29,8
1000H.: (27,1...31,5)

6th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 24,1...27,1
1000H.: (23,4...27,8)

7th speed 1/min: 600

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 23,0...26,0
1000H.: (21,5...27,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 440

ELAB volt: -

Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 440

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 7,0...11,0
1000H.: (5,0...13,0)

2nd speed 1/min: 475

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 2,5...7,5
1000H.: (0,5...9,5)

3rd speed 1/min: 570

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 0,0...3,6
1000H.: -

Arrangement of drivers on engine- speed lever for exhaust-gas- recirculation valve linkage (guage)

1st speed 1/min: 1100

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 10,6...11,6
1000H.: (9,1...13,1)

Automatic starting fuel delivery:

1st speed 1/min: 400

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,6..1,85
SVS max. mm : 3,4

Remarks:

Note regarding Swiss version:
In the event of "smoke" complaint,
turn full-load screw by 30° (in a
counter-clockwise direction).
After correcting full-load delivery,
have exhaust-gas-recirculation valve
adjusted by Ford Service.

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 N
Edition : 16.01.89
replaces : 19.12.86
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R22-7
Type number : 0 460 494 189

Customer-specific information
Customer : SOFIM

Engine : 8144.67.220

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): ±0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1800
Setting value mm: 7,6...8,0

Supply-pump pressure:

Speed 1/min: 1800
Setting value bar: 6,3...6,9

Full-load del. w/out charge press.:

Speed 1/min : 2000
Del.quantity cm3/
1000H.: 36,9...37,9
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 370
Del.quantity cm3/
1000H.: 8,0...12,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2350
Del.quantity cm3/
1000H.: 18,5...24,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 1800
TD travel mm: 7,6...8,0
mm: (7,1...8,5)
3rd speed 1/min: 2000
TD travel mm: 8,3...9,1
mm: (8,0...9,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,2...3,8
2nd speed 1/min: 1800
Supply-pump
pressure bar: 6,3...6,9
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6,7...7,3

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2100

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2500
Del.quantity cm³/: 0,0...4,5
1000H.: -
2nd speed 1/min: 2350
Del.quantity cm³/: 18,5...24,5
1000H.: (17,5...25,5)
3rd speed 1/min: 2100
Del.quantity cm³/: 36,1...38,7
1000H.: (35,1...39,7)
4th speed 1/min: 2000
Del.quantity cm³/: 36,9...37,9 -
1000H.: (35,1...39,7)
5th speed 1/min: 1100
Del.quantity cm³/: 42,5...45,5
1000H.: (41,7...46,3)
6th speed 1/min: 600
Del.quantity cm³/: 34,3...37,3
1000H.: (32,8...38,8)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2100
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 370
Del.quantity cm³/: 8,0...12,0
1000H.: (6,0...14,0)
2nd speed 1/min: 420
Del.quantity cm³/: 0,0...1,5
1000H.: -
3rd speed 1/min: 500
Del.quantity cm³/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400
ind. 1000H: 37,0
2nd speed 1/min: 480
Del.quantity cm³/: 32,0...38,00
max. 1000H : -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,4...5,7
MS mm : 1,7...1,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,8 A
 Compl. date: : 851
 Edition : 19.12.88
 replaces : 20.07.88
 Calibrating oil : ISO 4113
 Injection pump : VE 4/ 9F2400 R285
 Type number : 0 460 494 216

Customer-specific information
 Customer : FORD

Engine : 1,8 L.IDI

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
 x Wall thickness : 2
 x Length mm : 450

Start of delivery
 Prestroke mm : -
 (from BDC): -

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
 Setting value mm: 5,2...5,6
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
 Setting value bar: 6,3...6,9

K06

KSB solenoid-operated
 valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min: 1750
 Del.quantity cm3/
 1000H.: 29,1...29,5

KSB solenoid-operated
 valve volt: 12,0
 Dispersion cm3/: 2,0
 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 425
 Del.quantity cm3/
 1000H.: 14,0...18,0

KSB solenoid-operated
 valve volt: 12,0
 Dispersion cm3/: 2,5
 1000H.: (4,0)

Residual-Delivery Setting
 Speed 1/min: 540
 Del.quantity cm3/
 1000H.: 2,0...6,0

KSB-Solenoid-Operated
 valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2675
 Del.quantity cm3/
 1000H.: 8,0...14,0

KSB solenoid-operated
 valve volt: 12,0

Start:

Speed 1/min: 100
 Del.quantity : -
 mind cm3/1000H.: 51,0
 KSB solenoid-operated
 valve volt: 12,0

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

Mfg. date: until : 851

1st speed 1/min: 400
 TD travel mm: 3,4...3,6 A
 mm: (2,7...4,3) A

KSB solenoid-operated
 valve volt: -

2nd speed 1/min: 1000
 TD travel mm: 2,8...5,2 B
 mm: -

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 800
TD travel mm: 1,1...1,9
mm: (0,8...2,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
TD travel mm: 5,2...5,6
mm: (4,9...5,9)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2000
TD travel mm: 8,0...8,8
mm: (7,7...9,1)

KSB solenoid-operated
valve volt: 12,0

Mfg. date: from : 844

1st speed 1/min: 400
TD travel mm: 3,9...4,1 A
mm: (3,0...5,0) A

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
TD travel mm: 3,4...5,8 B
mm: (3,3...5,9) B

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 800
TD travel mm: 1,9...2,7
mm: (1,4...3,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
TD travel mm: 6,1...6,5
mm: (5,5...7,1)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2000
TD travel mm: 8,7...9,5
mm: (8,2...10,0)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

Mfg. date: until : 851
1st speed 1/min: 750
Supply-pump pressure bar: 3,8...4,4
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500
Supply-pump pressure bar: 6,3...6,9
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2000

Supply-pump pressure bar: 7,9...8,5
KSB solenoid-operated
valve volt: 12,0

Mfg date: from : 844
1st speed 1/min: 650
Supply-pump pressure bar: 3,8...4,4

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500

Supply-pump pressure bar: 6,3...6,9

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2000

Supply-pump pressure bar: 7,9...8,5

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 750
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

Mfg. date: until : 851
1st speed 1/min: 2950
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 2675
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 8,0...14,0
1000H.: (6,5...15,5)
3rd speed 1/min: 2550
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 18,0...26,0
1000H.: (16,0...28,0)
4th speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 27,0...29,0
1000H.: (26,0...30,0)
5th speed 1/min: 1750

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 29,1...29,5
1000H.: (27,6...31,0)
6th speed 1/min: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 27,5...30,5
1000H.: (26,7...31,3)
7th speed 1/min: 750
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 27,2...30,2
1000H.: (26,4...31,0)

Mfg. date: from : 844
1st speed 1/min: 1950
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...2,0
1000H.: (0,0...2,0)
2nd speed 1/min: 2675
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 8,0...14,0
1000H.: (6,5...15,5)
3rd speed 1/min: 2550
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 18,0...26,0
1000H.: (16,0...28,0)
4th speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 27,5...29,5
1000H.: (26,5...30,5)
5th speed 1/min: 1750
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 30,1...30,5
1000H.: (28,6...32,0)
6th speed 1/min: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 28,5...31,5
1000H.: (27,7...32,3)
7th speed 1/min: 650
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 27,5...30,5
1000H.: (26,7...31,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -

Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : 851
1st speed 1/min: 425
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 14,0...18,0
1000H.: (10,4...21,6)

Mfg. date: from : 844
1st speed 1/min: 425
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 14,0...18,0
1000H.: (10,4...21,6)

High Idle:

Speed 1/min: 590
Del.quantity cm3/: 12,0...16,0
1000H.: (8,4...19,6)
KSB-Solenoid-operated
valve Volt : 12,0

Residual:

Speed 1/min: 540
Del.quantity : 2,0...6,0
1000H.: (0,2...7,8)
KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 275
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
ind. 1000H: 60,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : K1
KF mm : 5,3...5,7

MS mm : 1,5...1,9
SVS max. mm : 4,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,8 B
Compl. date: : 851
Edition : 19.12.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R299
Type number : 0 460 494 218

Customer-specific information
Customer : FORD

Engine : 1,8 L.IDI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm : 0,70
mm : 0,65...0,75
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm : 5,2...5,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 6,3...6,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750
Del.quantity cm3/
1000H.: 29,1...29,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (4,0)
Residual-Delivery Setting
Speed 1/min: 540
Del.quantity cm3/
1000H.: 2,0...6,0
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2675
Del.quantity cm3/
1000H.: 8,0...14,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 51,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
 TD travel mm: 3,4...3,6 A
 mm: (2,7...4,3) A
 KSB solenoid-operated
 valve volt: -
 2nd speed 1/min: 1000
 TD travel mm: 2,8...5,2 B
 mm: -
 KSB solenoid-operated
 valve volt: -
 3rd speed 1/min: 800
 TD travel mm: 1,1...1,9
 mm: (0,8...2,2)
 KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 1500
 TD travel mm: 5,2...5,6
 mm: (4,9...5,9)
 KSB solenoid-operated
 valve volt: 12,0
 5th speed 1/min: 2000
 TD travel mm: 8,0...8,8
 mm: (7,7...9,1)
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Supply-pump
 pressure bar: 3,8...4,4
 KSB solenoid-operated
 valve volt: 12,0
 2nd speed 1/min: 1500
 Supply-pump
 pressure bar: 6,3...6,9
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 2000
 Supply-pump
 pressure bar: 7,9...8,5
 KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 750
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 2400
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...2,0
 1000H.: -
 2nd speed 1/min: 2675
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 8,0...14,0
 1000H.: (6,5...15,5)
 3rd speed 1/min: 2550
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 18,0...26,0
 1000H.: (16,0...28,0)
 4th speed 1/min: 2400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,0...29,0
 1000H.: (26,0...30,0)
 5th speed 1/min: 1750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 29,1...29,5
 1000H.: (27,6...31,0)
 6th speed 1/min: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,5...30,5
 1000H.: (26,7...31,3)
 7th speed 1/min: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,2...30,2
 1000H.: (26,4...31,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 14,0...18,0
 1000H.: (10,4...21,6)

High Idle:

Speed 1/min: 590
 Del.quantity cm³/: 12,0...16,0
 1000H.: (8,4...19,6)
 KSB-Solenoid-operated
 alve Volt: 12,0

Residual:

Speed 1/min: 540
Del.quantity : 2,0...6,0
1000H.: (0,2...7,8)
KSB-Solenoid-operated
valve Volt: 12,0

Arrangement of drivers on engine-
speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 11,3...12,3
1000H.: (9,3...14,3)

Automatic starting fuel delivery:

1st speed 1/min: 275
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 60,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: K1
KF	mm	: 5,3...5,7
MS	mm	: 1,5...1,9
SVS max.	mm	: 4,6

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.65...
0.75 mm referenced to outlet "B", with-
out timing-device cover KDEP 1151.

Test angular position:

Setting = 12.0 mm
Adjust lever of spring-type load-
impact damping:

Distance between ball stud and fastening screw	Dimension yb
22.4...23.4 mm	30.0...39.7 mm
20.2...21.2 mm	39.8...41.5 mm
18.0...19.0 mm	41.6...43.3 mm
15.8...16.8 mm	43.4...45.1 mm
13.6...14.6 mm	45.2...47.0 mm

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 P5
Edition : 17.01.89
replaces : 26.07.88
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R303
Type number : 0 460 494 225

Customer-specific information
Customer : FIAT-AUTO

Engine : X8/45S

Power k: 66

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,5...5,9

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,3...5,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 52,0...53,0
KSB solenoid-operated
valve volt : 12,0
Dispersion cm3/ : 2,5
1000H : (2,5)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm3/
1000H.: 40,0...41,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 11,0...15,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 2,5
1000H.: (2,5)

Residual-Delivery Setting
Speed 1/min: 700
Del.quantity cm3/
1000H.: 4,0...6,0
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 30,0...36,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3,2...4,8
mm: (2,5...5,5)

2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2,5...5,5
mm: -

3rd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,5...5,9
mm: (5,2...6,2)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 8,2...9,0
mm: (7,9...9,3)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 3,2...3,8

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,3...5,9

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 7,0...7,6

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
LDA stroke mm: 6,2
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 43,5...44,5
1000H.: (41,5...46,5)

2nd speed 1/min: 2650
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...7,0
1000H.: -

3rd speed 1/min: 2450
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 12,0...20,0
1000H.: (11,0...21,0)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 30,0...36,0
1000H.: -

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 50,5...53,5
1000H.: (49,5...54,5)

6th speed 1/min: 1500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 52,0...53,0
1000H.: (50,5...54,5)

7th speed 1/min: 800
Charge press. hPa: 400
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 43,5...44,5
1000H.: (41,5...46,5)
8th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 55,5...58,5
1000H.: -
9th speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 37,0...39,0
1000H.: (35,5...40,5)
10th speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 40,0...41,0
1000H.: (38,0...43,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 11,0...15,0
1000H.: (9,5...16,5)

Residual:

Speed 1/min: 700
Del.quantity : 4,0...6,0
1000H.: (3,0...7,0)
KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 220
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 57,0

2nd speed 1/min: 300
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 52,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,1...3,5
KF mm : 5,6...6,0
MS mm : 1,0...1,4
XK mm : 18,8...20,8
XL mm : 10,0...13,4

Remarks:
Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,7 A
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/ 9F2300 R313
Type number : 0 460 494 229

Customer-specific information
Customer : OPEL

Engine : 17 YD

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,2...4,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,4...6,0

KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 31,1...32,1
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 7,0...11,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Residual-Delivery Setting
Speed 1/min: 500
Del.quantity cm3/
1000H.: 1,5...2,5
KSB-Solenoid-operated
valve Volt : 12,0
Dispersion cm3/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 19,5...25,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 28,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
TD travel mm: 1,2...2,8
mm: -

2nd speed 1/min: 800
 TD travel mm: 1,9...4,3
 mm: -
 3rd speed 1/min: 1000
 TD travel mm: 1,9...4,3
 mm: -
 4th speed 1/min: 800
 TD travel mm: 0,9...1,7
 mm: (0,6...2,0)
 KSB solenoid-operated
 valve volt: 12,0
 5th speed 1/min: 1500
 TD travel mm: 4,2...4,6
 mm: (3,9...4,9)
 KSB solenoid-operated
 valve volt: 12,0
 6th speed 1/min: 2000
 TD travel mm: 6,2...7,0
 mm: -
 KSB solenoid-operated
 valve volt: 12,0
 1st speed 1/min: 2300
 TD travel mm: 7,5...8,3
 mm: (7,2...8,6)
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Supply-pump
 pressure bar: 3,4...4,0
 KSB solenoid-operated
 valve volt: 12,0
 2nd speed 1/min: 1500
 Supply-pump
 pressure bar: 5,4...6,0
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 2300
 Supply-pump
 pressure bar: 7,6...8,2
 KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 2300
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2735
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 4,5...10,5
 1000H.: -
 2nd speed 1/min: 2575
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 19,5...25,5
 1000H.: (18,5...26,5)
 3rd speed 1/min: 2400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 25,8...30,8
 1000H.: -
 4th speed 1/min: 2300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,9...30,5
 1000H.: (26,9...31,5)
 5th speed 1/min: 2000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,1...29,7
 1000H.: (26,1...30,7)
 6th speed 1/min: 1300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 31,1...32,1
 1000H.: (29,3...33,9)
 7th speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 24,5...27,5
 1000H.: (23,0...29,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 7,0...11,0
 1000H.: (5,0...13,0)

Residual:

Speed 1/min: 750
 Del.quantity : 0,0...1,6
 1000H.: -

KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 25,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 32,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,3...5,7
MS mm : 0,5...0,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,7 B
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R313-1
Type number : 0 460 494 230

Customer-specific information
Customer : OPEL

Engine : 17 YD

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,2...4,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,4...6,0

KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 31,1...32,1
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 7,0...11,0

KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Residual-Delivery Setting

Speed 1/min: 500
Del.quantity cm3/
1000H.: 1,5...2,5

KSB-Solenoid-Operated
valve Volt : 12,0
Dispersion cm3/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 19,5...25,5

KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 28,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
TD travel mm: 1,2...2,8
mm: -

2nd speed 1/min: 800
 TD travel mm: 1,9...4,3
 mm: -
 3rd speed 1/min: 1000
 TD travel mm: 1,9...4,3
 mm: -
 4th speed 1/min: 800
 TD travel mm: 0,9...1,7
 mm: (0,6...2,0)

KSB solenoid-operated
 valve volt: 12,0
 5th speed 1/min: 1500
 TD travel mm: 4,2...4,6
 mm: (3,9...4,9)

KSB solenoid-operated
 valve volt: 12,0
 6th speed 1/min: 2000
 TD travel mm: 6,2...7,0
 mm: -

KSB solenoid-operated
 valve volt: 12,0

1st speed 1/min: 2300
 TD travel mm: 7,5...8,3
 mm: (7,2...8,6)

KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Supply-pump pressure bar: 3,4...4,0

KSB solenoid-operated
 valve volt: 12,0

2nd speed 1/min: 1500
 Supply-pump pressure bar: 5,4...6,0

KSB solenoid-operated
 valve volt: 12,0

3rd speed 1/min: 2300

Supply-pump pressure bar: 7,6...8,2

KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)

2nd speed 1/min: 2300
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

K20

1st speed 1/min: 2735
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 4,5...10,5
 1000H.: -

2nd speed 1/min: 2575
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 19,5...25,5
 1000H.: (18,5...26,5)

3rd speed 1/min: 2400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 25,8...30,8
 1000H.: -

4th speed 1/min: 2300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,9...30,5
 1000H.: (26,9...31,5)

5th speed 1/min: 2000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,1...29,7
 1000H.: (26,1...30,7)

6th speed 1/min: 1300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 31,1...32,1
 1000H.: (29,3...33,9)

7th speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 24,5...27,5
 1000H.: (23,0...29,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 7,0...11,0
 1000H.: (5,0...13,0)

Residual:

Speed 1/min: 750
 Del.quantity : 0,0...1,6
 1000H.: -

KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 25,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 32,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,3...5,7
MS mm : 0,5...0,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6 A3
Edition : 19.12.88
replaces : 12.07.88
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R125-3
Type number : 0 460 494 233

Customer-specific information
Customer : FORD/GB

Engine : 1,6 L.IDI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 0.92
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 5,7...6,1
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

K22

Speed 1/min: 1500
Setting value bar: 5,3...5,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750
Del.quantity cm3/
1000H.: 28,8...29,8
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 440
Del.quantity cm3/
1000H.: 7,0...11,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: (2,0)

Full-load speed regulation:

Speed 1/min: 2675
Del.quantity cm3/
1000H.: 7,5...13,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 50,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1100
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 2,8...5,8
mm: -
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 800

TD travel mm: 2,8...3,6
mm: (2,5...3,9)
3rd speed 1/min: 1500
TD travel mm: 5,7...6,1
mm: (5,2...6,6)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2000
TD travel mm: 7,5...8,3
mm: (7,2...8,6)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,1...3,7
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,3...5,9
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6,6...7,2
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 2675
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 7,5...13,5
1000H.: (6,5...14,5)
3rd speed 1/min: 2550
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 18,5...26,5
1000H.: (17,5...29,5)
4th speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 27,2...29,2
1000H.: (26,0...30,4)
5th speed 1/min: 1750
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 28,8...29,8
1000H.: (27,1...31,5)
6th speed 1/min: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 24,1...27,1
1000H.: (23,4...27,8)
7th speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 23,0...26,0
1000H.: (21,5...27,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 440
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 440
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 7,0...11,0
1000H.: (5,0...13,0)
2nd speed 1/min: 475
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 2,5...7,5
1000H.: (0,5...9,5)
3rd speed 1/min: 570
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,6
1000H.: -

Arrangement of drivers on engine-speed lever for exhaust-gas-recirculation valve linkage (guage)

1st speed 1/min: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,6...11,6
1000H.: (9,1...13,1)

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,4...3,6
KF	mm	: 5,6...6,0
MS	mm	: 1,5...1,9
SVS max.	mm	: 3,0

Remarks:

Note regarding Swiss version:
In the event of "smoke" complaint,
turn full-load screw by 30° (in a
counter-clockwise direction).
After correcting full-load delivery,
have exhaust-gas-recirculation valve
adjusted by Ford Service.

For adjustment of switching point
(EGR valve), include 12.0 mm spacer
at third fuel-delivery stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X10
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R328
Type number : 0 460 494 239

Customer-specific information
Customer : VW

Engine : 086-1.6L LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750

Del.quantity cm3/
1000H.: 42,0...43,0
Dispersion cm3/ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del.quantity cm3/
1000H.: 26,5...27,5

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 9,0...11,0
Dispersion cm3/ : 2,5
1000H.: (3,0)
Residual-Delivery Setting
Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm3/
1000H: 13,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,8...2,6
mm: (1,5...2,9)
2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1800
Charge press. hPa: 750
TD travel mm: 4,8...5,6
mm: (4,5...5,9)
4th speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Charge press. hPa: 750
 Supply-pump pressure bar: 3,3...3,9
 2nd speed 1/min: 1500
 Charge press. hPa: 750
 Supply-pump pressure bar: 5,6...6,2
 3rd speed 1/min: 2250
 Charge press. hPa: 750
 Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Overflow : 41...83
 quantity cm3/10s: (26...98)
 2nd speed 1/min: 2250
 Overflow : 55...138
 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
 Charge-air pressure-setting point hPa: 300
 LDA stroke mm: 5,5
 Del.quantity cm3/: 32,5...33,5
 1000H.: (30,0...36,0)
 2nd speed 1/min: 2650
 Charge press. hPa: 750
 Del.quantity cm3/: 0,0...6,0
 1000H.: (0,0...6,0)
 3rd speed 1/min: 2525
 Charge press. hPa: 750
 Del.quantity cm3/: 13,0...17,0
 1000H.: (11,0...19,0)
 4th speed 1/min: 2425
 Charge press. hPa: 750
 Del.quantity cm3/: 26,5...36,5
 1000H.: (25,5...37,5)
 5th speed 1/min: 2250
 Charge press. hPa: 750
 Del.quantity cm3/: 36,3...38,3
 1000H.: (35,1...39,5)
 6th speed 1/min: 1500
 Charge press. hPa: 750
 Del.quantity cm3/: 42,0...43,0
 1000H.: (40,3...44,7)
 7th speed 1/min: 900
 Charge press. hPa: 300
 Del.quantity cm3/: 32,5...33,5
 1000H.: (30,0...36,0)
 8th speed 1/min: 700
 Charge press. hPa: 750
 Del.quantity cm3/: 34,0...37,0
 1000H.: (32,5...38,5)
 9th speed 1/min: 700

Del.quantity cm3/: 26,5...27,5
 1000H.: (24,0...30,0)
 10th speed 1/min: 600
 Del.quantity cm3/: 25,0...30,0
 1000H.: (22,5...32,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
 ELAB volt: -
 Del.quantity cm3/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
 Del.quantity cm3/: 9,0...11,0
 1000H.: (4,5...15,5)

High Idle:

Speed 1/min: 525
 Del.quantity cm3/: 7,0...9,0
 1000H.: (3,0...13,0)

Residual:

Speed 1/min: 500
 Del.quantity : 2,5...4,5
 1000H.: (0,0...7,0)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Del.quantity cm3/: -
 ind. 1000H: 35,0

2nd speed 1/min: 350
 Del.quantity cm3/: -
 max. 1000H : 37,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : K1
 KF mm : -
 MS mm : 1,1...1,5
 XK mm : 20,0...22,0
 XL mm : 9,9...13,3

Remarks:

Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6X11
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R333
Type number : 0 460 494 241

Customer-specific information
Customer : VW

Engine : 086-1.6(SG)

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 31,5...32,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 11,00...13,0
Dispersion cm3/: 2,0
1000H.: (3,0)
Residual-Delivery Setting
Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600
Del.quantity cm3/
1000H.: 12,0...16,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,0...1,8
mm: (0,7...2,1)
2nd speed 1/min: 1250
TD travel mm: 2,1...2,5
mm: (1,6...3,0)
3rd speed 1/min: 1800
TD travel mm: 4,2...5,0
mm: (3,9...5,3)
4th speed 1/min: 2400
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 2,7...3,3
2nd speed 1/min: 1250

Supply-pump pressure bar: 4,0...4,6
3rd speed 1/min: 2400
Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 800
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2400
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)
2nd speed 1/min: 2600
Del.quantity cm3/: 12,0...16,0
1000H.: (10,0...18,0)
3rd speed 1/min: 2500
Del.quantity cm3/: 19,0...29,0
1000H.: (18,0...30,0)
4th speed 1/min: 2400
Del.quantity cm3/: 27,0...29,0
1000H.: (25,8...30,2)
5th speed 1/min: 1500
Del.quantity cm3/: 31,5...32,5
1000H.: (29,8...34,2)
6th speed 1/min: 800
Del.quantity cm3/: 23,5...26,5
1000H.: (22,0...28,0)
7th speed 1/min: 600
Del.quantity cm3/: 20,5...25,5
1000H.: (18,0...28,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm3/: 11,0...13,0
1000H.: (8,0...16,0)
2nd speed 1/min: 425
Del.quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 500
Del.quantity : 3,3...5,3
1000H.: (1,8...6,8)

Automatic starting fuel delivery:

1st speed 1/min: 180
Del.quantity cm3/: -
ind. 1000H: 35,0

2nd speed 1/min: 380
Del.quantity cm3/: -
max. 1000H : 37,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,1...3,5
KF mm : 5,6...6,0
MS mm : 1,2...1,6
XK mm : 17,0...19,0
XL mm : 9,6...13,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 B
Edition : 17.01.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/ 9F2300 R54-1
Type number : 0 460 494 244

Customer-specific information
Customer : SEAT

Engine : X8/28

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,1...5,7

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del.quantity cm³/
1000H.: 34,2...35,2
Dispersion cm³/
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm³/
1000H.: 8,0...12,0
Dispersion cm³/
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2400
Del.quantity cm³/
1000H.: 17,0...21,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 48,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
2nd speed 1/min: 1500
TD travel mm: 4,3...4,7
mm: (3,8...5,2)
3rd speed 1/min: 2250
TD travel mm: 7,0...7,8
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,0...3,6
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,1...5,7
3rd speed 1/min: 2250
Supply-pump
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2600
Del.quantity cm3/: 0,0...6,0
1000H.: -
2nd speed 1/min: 2500
Del.quantity cm3/: 2,5...12,5
1000H.: (1,5...13,5)
3rd speed 1/min: 2400
Del.quantity cm3/: 17,0...21,0
1000H.: (15,0...23,0)
4th speed 1/min: 2250
Del.quantity cm3/: 28,0...30,0
1000H.: (26,8...31,2)
5th speed 1/min: 1500
Del.quantity cm3/: 34,2...35,2
1000H.: (32,5...36,9)
6th speed 1/min: 600
Del.quantity cm3/: 24,5...27,5
1000H.: (23,0...29,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm3/: 8,0...12,0
1000H.: (6,0...14,0)
2nd speed 1/min: 540
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 280
Del.quantity cm3/: -
ind. 1000H: 35,0
2nd speed 1/min: 480
Del.quantity cm3/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,6...2,0
SVS max.	mm	: 3,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 P5
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R343
Type number : 0 460 494 246

Customer-specific information
Customer : FIAT-AUTO

Engine : M710 DT 19 D

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,5...5,9
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,3...5,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 52,0...53,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³/ : 2,5
1000H : (2,5)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm³/
1000H.: 40,0...41,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 11,0...15,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³/ : 2,5
1000H.: (2,5)

Residual-Delivery Setting

Speed 1/min: 700
Del.quantity cm³/
1000H.: 4,0...6,0
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 30,0...36,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 55,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3,2...4,8
mm: (2,5...5,5)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2,5...5,5
mm: (2,5...5,5)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,5...5,9
mm: (5,2...6,2)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 8,2...9,0
mm: (7,9...9,3)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3,2...3,8

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500
Charge press. hPa: 1000

Supply-pump
pressure bar: 5,3...5,9

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2100
Charge press. hPa: 1000

Supply-pump
pressure bar: 7,0...7,6

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 43,5...44,5
1000H.: (41,5...46,5)

2nd speed 1/min: 2650
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...7,0
1000H.: -

3rd speed 1/min: 2450
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 12,0...20,0
1000H.: (11,0...21,0)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 30,0...36,0
1000H.: (29,0...37,0)

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 50,5...53,5
1000H.: (49,5...54,5)

6th speed 1/min: 1500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 52,0...53,0
1000H.: (50,5...54,5)

7th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 55,5...58,5
1000H.: -

8th speed 1/min: 800
Charge press. hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 43,5...44,5
1000H.: (41,5...46,5)

9th speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 37,0...39,0
1000H: (35,5...40,5)

10th speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 40,0...41,0
1000H: (38,0...43,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 11,0...15,0
1000H.: (9,5...16,5)

Residual:

Speed 1/min: 500
Del.quantity : 4,8...7,8
1000H.: -
KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 220
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
ind. 1000H: 57,0

2nd speed 1/min: 300
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 48,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 P6
Edition : 17.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R303-1
Type number : 0 460 494 250

Customer-specific information
Customer : FIAT

Engine : M710-CT 19,0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6,0...6,4
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000

L07

Setting value bar: 5,6...6,2
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 53,0...54,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 2,5
1000H : (2,5)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm3/
1000H.: 42,0...43,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 11,0...15,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 2,5
1000H.: (2,5)

Residual-Delivery Setting

Speed 1/min: 700
Del.quantity cm3/
1000H.: 4,0...6,0
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 30,0...36,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

Mfg. date: until : -

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3,9...5,5
mm: (3,2...6,2)

2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 3,5...6,5

3rd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,9...2,7
mm: (1,6...3,0)

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 1500
Charge press. hPa: 1000

TD travel mm: 6,0...6,4
mm: (5,7...6,7)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 2100
Charge press. hPa: 1000

TD travel mm: 8,6...9,4
mm: (8,3...9,7)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 3,6...4,2

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500
Charge press. hPa: 1000

Supply-pump pressure bar: 5,6...6,2

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2100
Charge press. hPa: 1000

Supply-pump pressure bar: 7,2...7,8

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
LDA stroke mm: 6,2
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 51,0...52,0
1000H.: (49,0...54,0)

2nd speed 1/min: 2650
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...7,0
1000H.: -

3rd speed 1/min: 2450
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 12,0...20,0
1000H.: (11,0...21,0)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 30,0...36,0
1000H.: (29,0...37,0)

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 49,5...52,5
1000H.: (48,5...53,5)

6th speed 1/min: 1500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 53,0...54,0
1000H.: (51,5...55,5)

7th speed 1/min: 800
Charge press. hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 51,0...52,0
1000H.: (49,0...54,0)

8th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 56,0...59,0

1000H: -

9th speed 1/min: 800

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 41,0...43,0

1000H: (39,5...44,5)

10th speed 1/min: 600

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 42,0...43,0

1000H: (40,0...45,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400

Del.quantity cm³/: 0,0...3,0

max. 1000H.: -

Idle delivery:

1st speed 1/min: 400

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 11,0...15,0

1000H.: (9,5...16,5)

Residual:

Speed 1/min: 700

Del.quantity : 4,0...6,0

1000H.: (3,0...7,0)

KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 220

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: -

ind. 1000H: 57,0

2nd speed 1/min: 300

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: -

max. 1000H : 47,5

Shutoff electromagnet:

Cut-in

min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4

KF mm : 5,6...6,0

MS mm : 1,0...1,4

XK mm : 18,8...20,8

XL mm : 10,0...13,4

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,0 K1
Edition : 16.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 5/ 9F2250 L245
Type number : 0 460 905 563
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 153T-LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3,0...3,4
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 6,0...6,6
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Del.quantity cm3/
1000H.: 42,7...43,7
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del.quantity cm3/
1000H.: 27,0...28,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 390
Del.quantity cm3/
1000H.: 10,0...12,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 2,5
1000H.: (3,0)

Residual-Delivery Setting
Speed 1/min: 540
Del.quantity cm3/
1000H.: 2,5...3,5
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2525
Del.quantity cm3/
1000H: 16,0...20,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : 37,0...48,0
mind cm3/1000H.: -
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
 Charge press. hPa: 750
 TD travel mm: 2,3...2,7
 mm: 1,5...3,5
 2nd speed 1/min: 1000
 Charge press. hPa: 750
 TD travel mm: 0,8...1,6
 mm: (0,5...1,9)

KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1500
 Charge press. hPa: 750
 TD travel mm: 3,0...3,4
 mm: (1,5...3,9)

KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 2250
 Charge press. hPa: 750
 TD travel mm: 6,1...6,9
 mm: (5,8...7,2)

KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 5,2...6,4

2nd speed 1/min: 700
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 4,1...4,7

KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1500
 Charge press. hPa: 750

Supply-pump
 pressure bar: 6,0...6,6

KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 2250
 Charge press. hPa: 750

Supply-pump
 pressure bar: 7,7...8,3

KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 2250
 Charge press. hPa: 750

KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700
 Charge-air pressure-setting
 point hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...6,0
 1000H.: (0,0...6,0)

2nd speed 1/min: 2525
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 16,0...20,0
 1000H.: (14,0...22,0)

3rd speed 1/min: 2425
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 25,5...35,5
 1000H.: (24,5...36,5)

4th speed 1/min: 2250
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 36,5...38,5
 1000H.: (35,3...39,7)

5th speed 1/min: 1500
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 42,7...43,7
 1000H.: (41,0...45,4)

6th speed 1/min: 850
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 33,5...34,5
 1000H.: (31,0...37,0)

7th speed 1/min: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 27,0...28,0
 1000H.: (24,5...30,5)

8th speed 1/min: 700
 Charge press. hPa: 750
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 37,0...40,0
 1000H.: (35,5...41,5)

9th speed 1/min: 500
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 24,5...29,5
 1000H.: (22,0...32,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 390
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,0...12,0
1000H.: (5,5...16,5)
2nd speed 1/min: 415
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 6,0...10,0
1000H.: (2,5...13,5)

Residual:

Speed 1/min: 490
Del.quantity : 3,3...5,3
1000H.: (0,8...7,8)
KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 190
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 35,0...85,0
ind. 1000H: 35,0

2nd speed 1/min: 390
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...35,0
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : K1
KF mm : -
MS mm : 1,6...2,0
SVS max. mm : 1,3

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W9
Edition : 17.01.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R136-2
Type number : 9 460 230 001

Customer-specific information
Customer : VW

Engine : 086

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del.quantity cm3/
1000H.: 31,5...32,5
Dispersion cm3/: 3,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 475
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 3,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 2600
Del.quantity cm3/
1000H.: 11,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 38,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 1500
TD travel mm: 2,9...3,3
mm: (2,4...3,8)
3rd speed 1/min: 2400
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,8...3,4
2nd speed 1/min: 1500
Supply-pump
pressure bar: 4,9...5,5
3rd speed 1/min: 2400
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 55...138
quantity cm3/10s: (40...153)
2nd speed 1/min: 2400

Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Del.quantity cm3/: 0,0...2,5
1000H.: -
2nd speed 1/min: 2600
Del.quantity cm3/: 11,0...17,0
1000H.: (10,0...18,0)
3rd speed 1/min: 2400
Del.quantity cm3/: 26,5...28,5
1000H.: (25,2...29,8)
4th speed 1/min: 1500
Del.quantity cm3/: 31,5...32,5
1000H.: (29,7...34,3)
5th speed 1/min: 600
Del.quantity cm3/: 19,5...22,5
1000H.: (18,0...24,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 475
Del.quantity cm3/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 600
Del.quantity cm3/: 0,0...6,0
1000H.: -
3rd speed 1/min: 1200
Del.quantity cm3/: 0,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400
Del.quantity cm3/: -
ind. 1000H: 15,5

2nd speed 1/min: 500
Del.quantity cm3/: -
max. 1000H : 21,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

L14

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,3...1,5
SVS max.	mm	: 2,5
FH	mm	: 1,8...2,4
XK	mm	: 18,4...20,4
XL	mm	: 9,6...12,7

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 F
Edition : 24.02.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 074 087
Injection pump
Pump designation : PES4M55C320RS175
EP type number : 0 410 054 957
Governor
Governor design. : RSV350...1650MOC353-1
Governor no. : 0 420 033 037

Customer-spec. information
Customer : DB-NKW

Engine : OM601 (2,3L)

1st version kW : 51.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm3 : 0.1
100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 11.50

Speed rpm : 1670...1680

2nd rack travel in: 4.00

Speed rpm : 1765...1795

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.7

Testing:

Speed rpm : 100

Minimum rack travel: 20.10

Speed rpm : 350

Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in m: 12.40...12.50

2nd speed rpm : 1000

Rack travel in m: 12.90...13.10

3rd speed rpm : 1250

Rack travel in m: 12.80...13.00

4th speed rpm : 1400

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del.quantity cm³/ : 38.5...40.0

1000 s: (37.5...41.0)

Spread cm³ : 2.50

1000 s: (3.)

Speed rpm : 1400

Del.quantity cm³/ : 38.5...40.5

1000 s: (37.5...41.5)

Spread cm³ : 2.50

1000 s: (3.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1670...1680

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

L16

Speed rpm : 350

Rack travel in mm : 5.60...5.80

Del.quantity cm³/ : 5.0...7.0

1000 s: (4.5...9.0)

Spread cm³ : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 G
 Edition : 24.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 088
 Injection pump
 Pump designation : PES4M55C320RS175
 EP type number : 0 410 054 957
 Governor
 Governor design. : RSV400...2000MOC353-
 2
 Governor no. : 0 420 033 038

Customer-spec. information
 Customer : DB-NKW

Engine : OM601 (2,3L)

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1980

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1980

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 11.50

Speed rpm : 2020...2030

2nd rack travel in: 4.00

Speed rpm : 2120...2150

4th rack travel in: 2250

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 4...12
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 20.10
Speed rpm : 400
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1980
Rack travel in m: 12.40...12.50
2nd speed rpm : 500
Rack travel in m: 13.60...13.80
3rd speed rpm : 1000
Rack travel in m: 13.40...13.50
4th speed rpm : 1250
Rack travel in m: 13.20...13.40
5th speed rpm : 1500
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 37.0...38.5
1000 s: (36.0...39.5)
Spread cm³ : 2.50
1000 s: (3.)
Speed rpm : 1250
Del.quantity cm³/ : 39.0...41.0
1000 s: (38.0...42.0)
Spread cm³ : 2.50
1000 s: (3.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 2020...2030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 r2
Edition : 17.02.89
Replaces : 19.08.88
Test oil : ISO-4113

Combination no. : 0 400 074 901

Injection pump
Pump designation : PES4M55C320RS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF375/2300M56-8
Governor no. : 0 420 021 116

Customer-spec. information
Customer : DB

Engine : OM601-AbgasL.

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,0...8,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

-Control lever at idle stop.
With $n = 375 \text{ 1/min.}$ and $p_u = 450 \text{ mbar,}$
control rod must move quickly to
control-rod travel = 0 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $17.3^\circ \dots 17.7^\circ$
($17.2 \dots 17.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r3
Edition : 17.02.89
Replaces : 19.08.88
Test oil : ISO-4113

Combination no. : 0 400 074 902

Injection pump
Pump designation : PES4M55C320RS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF360/2300M60-23
Governor no. : 0 420 021 117

Customer-spec. information
Customer : DB

Engine : OM601-Abgasl.

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,0...8,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $17.3^\circ \dots 17.7^\circ$

($17.2 \dots 17.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r4
Edition : 17.02.89
Replaces : 04.11.88
Test oil : ISO-4113

Combination no. : 0 400 074 903

Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF360/2300M60-9
Governor no. : 0 420 021 109

Customer-spec. information
Customer : DB

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines - : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 335
Rack travel in mm : 6.9

Testing:

Speed rpm : 225
Minimum rack travel: 9.50
Speed rpm : 335
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.50
Speed rpm : 610...710
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.40...5.60
: (5.30...5.70)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 1800
Rack travel in m: 12.20...12.40
3rd speed rpm : 2200
Rack travel in m: 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm³/ : 34.0...35.5
1000 s: (33.0...36.5)
Spread cm³ : 2.50
1000 s: (3.)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm³/ : 33.5...35.5
1000 s: (32.5...36.5)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 335
Rack travel in mm : 6.80...7.00
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 360
Rack travel in mm : (13,1...14,5)
Del.quantity cm³/ : -
1000 s: (29,0...37,0)

Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,00...1,00
Current

short-duration A : 3,0

Starting test

Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52,00

Remarks:

:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover

point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $19.3^\circ \dots 19.7^\circ$

($19.2 \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r5
Edition : 17.02.89
Replaces : 04.11.88
Test oil : ISO-4113

Combination no. : 0 400 074 904

Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF375/2300M56-6
Governor no. : 0 420 021 110

Customer-spec. information
Customer : DB

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 7.0

Testing:

Speed rpm : 250
Minimum rack travel: 11.50
Speed rpm : 375
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.50
Speed rpm : 640...740
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.80...6.00
: (5.70...6.10)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 1800
Rack travel in m: 12.20...12.40
3rd speed rpm : 2200
Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm3/ : 34.0...35.5
1000 s: (33.0...36.5)
Spread cm3 : 2.50
1000 s: (3.)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm3/ : 33.5...35.5
1000 s: (32.5...36.5)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8,3...9,9)
Del.quantity cm3/ : -
1000 s: 11,0...19,0)
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 v7
Edition : 24.02.89
Replaces : 06.09.88
Test oil : ISO-4113

Combination no. : 0 400 074 909

Injection pump
Pump designation : PES4M55C320RS107-2
EP type number : 0 410 054 962
Governor
Governor design. : RSF375/1900M18-4
Governor no. : 0 420 021 096

Customer-spec. information
Customer : DB

Engine : OM616 (2.4 L)

1st version kW : 47.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 20.00...0.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 3.7...3.8

100 s: (3.6...3.9)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 37.5...38.5

1000 : (36.5...39.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,80...8,20

Speed rpm : 2100

4th rack travel in: 2350

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 9...13

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.2

```
Speed          rpm : 250
Minimum rack travel: 10.50
Speed          rpm : 375
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed          rpm : 720...820
Speed          rpm : 1000
Maximum rack travel: 1.50
```

```
Speed      rpm      : 450
 Rack travel in mm : 4,90...5,10
                  : (4,80...5,20)
```

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 13.00...13.10
2nd speed   rpm   : 1400
  Rack travel in m: 12.40...12.60
3rd speed   rpm   : 1900
  Rack travel in m: 12.00...12.20
```

```

1st version
Speed      rpm      : 1400
Del.quantity cm3/ : 37.5...39.5
            1000 s : (36.5...40.5)
Spread     cm3      : 2.50
            1000 s : (3.)
Speed      rpm      : 1900
Del.quantity cm3/ : 38.0...40.0
            1000 s : (37.0...41.0)
Spread     cm3      : 2.50
            1000 s : (3.00)

```

```
Speed          rpm      : 100
Del.quantity   cm3/     : 53.0...0.0
                1000 s: (53.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

```

1st version
Speed      rpm      : 2100
Rack travel in mm : 7.80...8.20
Del.quantity cm3/   : 20.0...24.0
            1000 s : (19.0...25.0)
Spread     cm3      : 2.50
            1000 s : (3.00)

```

MO4

```
Speed      rpm      : 375
Rack travel in mm : 6.10...6.30
Del.quantity cm3/  : 6.0...7.0
           1000 s : (5.5...9.0)
Spread     cm3      : 1.00
           1000 s : (1.50)
```

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 v
Edition : 24.02.89
Replaces : 03.87
Test oil : ISO-4113

Combination no. : 0 400 074 910

Injection pump
Pump designation : PES4M55C32ORS107-2
EP type number : 0 410 054 962
Governor
Governor design. : RSF375/1700M18-1
Governor no. : 0 420 021 028

Customer-spec. information
Customer : DB-NKW

Engine : OM616 (2.4 L)
1st version kW : 45.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1650

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 3.5...3.6

100 s: (3.4...3.7)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1650

Del.quantity : 35.5...36.5

1000 : (34.5...37.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,4

Speed rpm : 1900

4th rack travel in: 2350

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 700

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.1

```

Speed      rpm : 250
Minimum rack travel: 11.00
Speed      rpm : 375
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed      rpm : 720...820
Speed      rpm : 300
Maximum rack travel: 10.50

```

```
Speed      rpm      : 450
 Rack travel in mm : 4,80...5,00
                  : (4,70...5,10)
```

```
Torque control curve - 1st version
1st speed   rpm   : 1650
  Rack travel in m: 11.90...12.00
2nd speed   rpm   : 1200
  Rack travel in m: 12.10...12.30
3rd speed   rpm   : 600
  Rack travel in m: 12.80...13.00
```

```

Speed          rpm      : 1200
Del.quantity   cm3/     : 34.5...36.5
                1000 s : (33.5...37.5)
Spread         cm3      : 2.50
                1000 s : (3.)
Speed          rpm      : 600
Del.quantity   cm3/     : 34.5...36.5
                1000 s : (33.5...37.5)
Spread         cm3      : 2.50
                1000 s : (3.00)

```

```
Speed          rpm      : 100
Del.quantity   cm3/     : 53.0...0.0
                1000 s : (53.0...0.0)
Rack travel in mm : 20.10...0.00
```

```
Speed          rpm      : 1900
Rack travel    in mm    : 7.00...7.40
Del.quantity   cm3/     : 16.0...20.0
               1000 s   : (15.0...21.0)
Spread         cm3      : 2.50
               1000 s   : (3.00)
```

MO6

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 P12
Edition : 17.02.89
Replaces : 10.04.87
Test oil : ISO-4113

Combination no. : 0 400 074 911

Injection pump
Pump designation : PES4M55C320RS163
EP type number : 0 410 054 961
Governor
Governor design. : RSF360/2300M60-6
Governor no. : 0 420 021 091

Customer-spec. information
Customer : DB

Engine : OM601 (2.0)

1st version kW : 52.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6,80...7,20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

Speed rpm : 335
Rack travel in mm : 5.1

Testing:

Speed rpm : 250
Minimum rack trave: 8.50
Speed rpm : 335
Rack travel in mm : 5.00...5.20
Speed rpm : 1000
Maximum rack trave: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 3,80...4,00
: (3,70...4,10)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.10...11.20
2nd speed rpm : 1800
Rack travel in m: 10.50...10.70
3rd speed rpm : 2200
Rack travel in m: 10.00...10.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm3/ : 33.5...35.0
1000 s: (32.5...36.0)
Spread cm3 : 2.50
1000 s: (3.)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm3/ : 31.0...33.0
1000 s: (30.0...34.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 55.0...0.0
1000 s: (55.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 6.80...7.20
Del.quantity cm3/ : 16.0...20.0
1000 s: (15.0...21.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 335
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 360
Rack travel in mm : (12,0...13,4)
Del.quantity cm3/ : -
1000 s: (30,0...38,0)

Current A : 1,8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current

short-duration A : 3,0

Starting test

Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 55,0

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $17.3^\circ \dots 17.7^\circ$

($17.2 \dots 17.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 P13
 Edition : 17.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 912
 Injection pump
 Pump designation : PES4M55C320RS163
 EP type number : 0 410 054 961
 Governor
 Governor design. : RSF375/2300M56-4
 Governor no. : 0 420 021 090

Customer-spec. information
 Customer : DB

Engine : OM601 (2.0)

1st version kW : 52.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

M10

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6,80...7,20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $17.3^{\circ} \dots 17.7^{\circ}$
($17.2 \dots 17.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 P11
Edition : 17.02.89
Replaces : 22.04.88
Test oil : ISO-4113

Combination no. : 0 400 074 926

Injection pump
Pump designation : PES4M55C320RS161
EP type number : 0 410 054 964
Governor
Governor design. : RSF375/2300M56-3
Governor no. : 0 420 021 056

Customer-spec. information
Customer : DB

Engine : OM601-LVP

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

M13

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 7,10...7,50

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control Lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 375

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $18.3^{\circ} \dots 18.7^{\circ}$
($18.2 \dots 18.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 U3
Edition : 17.02.89
Replaces : 22.04.88
Test oil : ISO-4113

Combination no. : 0 400 074 927

Injection pump
Pump designation : PES4M55C32ORS161
EP type number : 0 410 054 964
Governor
Governor design. : RSF360/2300M60-2
Governor no. : 0 420 021 053

Customer-spec. information
Customer : DB

Engine : OM601-LVP

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 335

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $18.3^\circ \dots 18.7^\circ$

($18.2 \dots 18.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 P
Edition : 17.02.89
Replaces : 11.85
Test oil : ISO-4113

Combination no. : 0 400 074 930

Injection pump
Pump designation : PES4M55C320RS152-3
EP type number : 0 410 054 967
Governor
Governor design. : RSF360/2300M59-6
Governor no. : 0 420 021 048

Customer-spec. information
Customer : DB-PKW

Engine : OM601 (2.0 L)

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.8...8.2

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 335

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 N
Edition : 17.02.89
Replaces : 15.01.88
Test oil : ISO-4113

Combination no. : 0 400 074 936

Injection pump
Pump designation : PES4M55C320RS152-3
EP type number : 0 410 054 967
Governor
Governor design. : RSF375/2300M55-4
Governor no. : 0 420 021 046

Customer-spec. information
Customer : DB

Engine : OM601 (2.0 L)

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,8...8,2

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 375

LOW IDLE

```

+ Speed      rpm      : 375
+ Rack travel in mm : 5.40...5.60
+ Del.quantity cm3/   : 5.0...6.0
+              1000 s : (4.5...9.0)
+ Spread     cm3      : 1.00
+              1000 s : (1.50)

```

SETTING PNEUMATIC FAST IDLE
(ELA)

```

+ Speed      rpm      : 425
+ Rack travel in mm : (7,0...8,6)
+ Del.quantity cm3/  : -
+             1000 s : (13,0...21,0)
+ Vacuum     hPa     : 400

```

+ Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,2 F1
Edition : 17.02.89
Replaces : 11.85
Test oil : ISO-4113
Combination no. : 0 400 074 950
Injection pump
Pump designation : PES4M55C320RS152-1
EP type number : 0 410 054 973
Governor
Governor design. : RSF360/2300M60
Governor no. : 0 420 021 032

Customer-spec. information
Customer : DB

Engine : OM601 (2.2 L)

1st version kW : 54.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.4...3.5

100 s: (3.3...3.6)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 34.0...35.0

1000 : (33.0...36.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6,90...7,30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 335

Rack travel in mm : 5.5

Testing:

Speed rpm : 225
Minimum rack travel : 9.50
Speed rpm : 335
Rack travel in mm : 5.40...5.60
Rack travel in mm : 1.50
Speed rpm : 590...690
Speed rpm : 1000
Maximum rack travel : 1.00

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 4,20...4,40
: (4,10...4,50)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in mm : 12.10...12.20
2nd speed rpm : 1800
Rack travel in mm : 11.70...11.90
3rd speed rpm : 2200
Rack travel in mm : 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 930
Rack travel mm : 0.10...0.50

Measurement

Speed 1/min : 1000

1st pressure hPa : 840
Rack travel in mm : 1.10...1.30
2nd pressure hPa : 700
Rack travel in mm : 2.30...2.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800
Del. quantity cm³/ : 36.0...37.5
1000 s : (35.0...38.5)
Spread cm³ : 2.50
1000 s : (3.)
Speed rpm : 2200
Del. quantity cm³/ : 36.0...38.0
1000 s : (35.0...39.0)
Spread cm³ : 2.50
1000 s : (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 55.0...0.0
1000 s : (55.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2500
Rack travel in mm : 6.90...7.30
Del. quantity cm³/ : 14.0...19.0
1000 s : (13.0...20.0)
Spread cm³ : 2.50
1000 s : (3.00)

LOW IDLE

Speed rpm : 335
Rack travel in mm : 5.40...5.60
Del. quantity cm³/ : 5.0...6.0
1000 s : (4.5...9.0)
Spread cm³ : 1.00
1000 s : (1.50)

SETTING/TESTING ELECTRONIC IDLE
REGULATION (ELR)

Control lever at idle stop

Speed rpm : 360
Rack travel in mm : (12,0...13,4)
Del. quantity cm³/ : -
1000 s : (31,0...38,0)

Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current

short-duration A : 3,0

Starting test

Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s : 55,0

Remarks:

:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 48.5°,
control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $19.3^\circ \dots 19.7^\circ$

($19.2 \dots 19.8^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 L2
Edition : 24.02.89
Replaces : 12.85
Test oil : ISO-4113

Combination no. : 0 400 074 955

Injection pump
Pump designation : PES4M55C32ORS107-1
EP type number : 0 410 054 977
Governor
Governor design. : RSF375/1700M18-1
Governor no. : 0 420 021 028

Customer-spec. information
Customer : DB

Engine : OM616 (2.4 L)

1st version kW : 45.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1650

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 3.5...3.6

100 s: (3.4...3.7)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1650

Del.quantity : 35.5...36.5

1000 : (34.5...37.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,00...7,40

Speed rpm : 1900

4th rack travel in: 2350

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 700

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.1

```
Speed          rpm      : 250
Minimum rack travel: 11.00
Speed          rpm      : 375
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed          rpm      : 720...820
Speed          rpm      : 300
Maximum rack travel: 10.50
```

```
Speed rpm : 450
Rack travel in mm : 4,80...5,00
                  : (4,70...5,10)
```

```

Torque control curve - 1st version
1st speed   rpm   : 1650
  Rack travel in m: 11.90...12.00
2nd speed   rpm   : 1200
  Rack travel in m: 12.10...12.30
3rd speed   rpm   : 600
  Rack travel in m: 12.80...13.00

```

```

Speed      rpm      : 1200
Del.quantity cm3/    : 34.5...36.5
           1000 s: (33.5...37.5)
Spread     cm3      : 2.50
           1000 s: (3.)
Speed      rpm      : 600
Del.quantity cm3/    : 34.5...36.5
           1000 s: (33.5...37.5)
Spread     cm3      : 2.50
           1000 s: (3.00)

```

```
Speed          rpm      : 100
Del.quantity   cm3/     : 53.0...0.0
                1000 s : (53.0...0.0)
Rack travel in mm : 20.10...0.00
```

```
Speed          rpm      : 1900
Rack travel    in mm    : 7.00...7.40
Del.quantity   cm3/     : 16.0...20.0
               1000 s   : (15.0...21.0)
Spread         cm3      : 2.50
               1000 s   : (3.00)
```

M27

-Control lever at idle stop.
With $n = 375 \text{ 1/min.}$ and $p_u = 450 \text{ mbar,}$
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 L1
Edition : 17.02.89
Replaces : 01.85
Test oil : ISO-4113

Combination no. : 0 400 074 961

Injection pump
Pump designation : PES4M55C320RS107-1
EP type number : 0 410 054 977
Governor
Governor design. : RSF375/2250M18
Governor no. : 0 420 021 017

Customer-spec. information
Customer : DB

Engine : OM616 (2.4 L)

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 20.00...0.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 3.9...4.0

100 s: (3.8...4.1)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 39.0...40.0

1000 : (38.0...41.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

Testing:

1st rack travel in: 8.60

Speed rpm : 0...2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 9...13

Setting point w/out bumper spring

Speed rpm : 375

```
Speed      rpm      : 375
Rack travel in mm : 6.00...6.20
Del.quantity cm3/   : 6.0...7.0
           1000 s : (5.5...9.0)
Spread     cm3      : 1.00
           1000 s : (1.50)
```

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

1st version

```

Speed      rpm      : 1800
Del.quantity cm3/    : 39.0...41.0
              1000 s: (38.0...42.0)
Spread     cm3      : 2.50
              1000 s: (3.)
Speed      rpm      : 2200
Del.quantity cm3/    : 39.5...41.5
              1000 s: (38.5...42.5)
Spread     cm3      : 2.50
              1000 s: (3.00)

```

```
Speed      rpm      : 100
Del.quantity cm3/    : 53.0...0.0
Rack travel in mm   : 20.10...0.00
```

1st version

```
Speed          rpm      : 2500
Rack travel in mm : 8.20...8.60
Del.quantity cm3/  : 23.0...27.0
                1000 s : (22.0...28.0)
Spread         cm3     : 2.50
                1000 s : (3.00)
```

LOW IDLE

NO1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,2 D
Edition : 17.02.89
Replaces : 06.84
Test oil : ISO-4113

Combination no. : 0 400 074 963

Injection pump
Pump designation : PES4M55C320RS152-1
EP type number : 0 410 054 973
Governor
Governor design. : RSF375/2300M56
Governor no. : 0 420 021 024

Customer-spec. information
Customer : DB-PKW

Engine : OM601 (2.2 L)

1st version kW : 54.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 3.4...3.5

100 s: (3.3...3.6)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 34.0...35.0

1000 : (33.0...36.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

Testing:

1st rack travel in: 9.20

Speed rpm : 0...2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 6.5

Testing:

Speed rpm : 250
Minimum rack trave: 12.50
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.50
Speed rpm : 630...730
Speed rpm : 1000
Maximum rack trave: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 400

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.10...13.20
2nd speed rpm : 1800
Rack travel in m: 12.70...12.90
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 1000
Pressure hPa : 930
Rack travel mm : 0.00...0.40

Measurement

Speed 1/min : 1000

1st pressure hPa : 840
Rack travel in m: 1.00...1.20
2nd pressure hPa : 700
Rack travel in m: 2.10...2.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800
Del.quantity cm3/ : 36.0...37.5
1000 s: (35.0...38.5)
Spread cm3 : 2.50
1000 s: (3.)
Speed rpm : 2200
Del.quantity cm3/ : 36.0...38.0
1000 s: (35.0...39.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

N03

Speed rpm : 100
Del.quantity cm3/ : 55.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.60...0.00

HIGH IDLE

1st version

Speed rpm : 2500
Rack travel in mm : 8.80...9.20
Del.quantity cm3/ : 21.0...25.0
1000 s: (20.0...26.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8,0...9,6)
Del.quantity cm3/ : -
1000 s: (11,0...19,0)
Vacuum hPa : 400

Remarks:

:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 46°. No change in control-rod travel after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 30°. Speed range 600...800 1/min, CRT = 10.0 mm.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Pin projection = $16.60 \dots 16.70$ mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 A
 Edition : 24.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 009
 Injection pump
 Pump designation : PES5M55C320RS176
 EP type number : 0 410 055 975
 Governor
 Governor design. : RSV350...1650MOC353
 Governor no. : 0 420 033 036

Customer-spec. information
 Customer : DB-NKW

Engine : OM602 (2,9L)

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

N05

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 11.50

Speed rpm : 1670...1680

2nd rack travel in: 4.00

Speed rpm : 1760...1790

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack trave: 20.10
Speed rpm : 350
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 13.20...13.40
3rd speed rpm : 1350
Rack travel in m: 12.80...13.00
4th speed rpm : 1400
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 40.0...41.5
1000 s: (39.0...42.5)
Spread cm3 : 2.50
1000 s: (3.)
Speed rpm : 1400
Del.quantity cm3/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm3 : 2.50
1000 s: (3.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1670...1680

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

Remarks:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,9 B
Edition : 24.02.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 010

Injection pump
Pump designation : PES5M55C320RS176
EP type number : 0 410 055 975
Governor
Governor design. : RSV350...1500MOC353-
3
Governor no. : 0 420 033 040

Customer-spec. information
Customer : DB-NKW

Engine : OM602 (2,9L)

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1480
Rack travel in mm : 10.60...10.70
Del.quantity cm3/ : 3.5...3.6
100 s: (3.4...3.7)
Spread cm3 : 0.2
100 s: (0.3)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 0.5...0.7
100 s: (0.4...0.9)
Spread cm3 : 0.1
100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1480
Del.quantity : 35.0...36.0
1000 : (34.0...37.0)
Spread cm3 : 2.50
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 9.70
Speed rpm : 1520...1530
2nd rack travel in: 4.00
Speed rpm : 1570...1600
4th rack travel in: 1750
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever

position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7

Testing:
Speed rpm : 100
Minimum rack trave: 20.10
Speed rpm : 350
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1480
Rack travel in m: 10.60...10.70
2nd speed rpm : 1000
Rack travel in m: 12.50...12.70
3rd speed rpm : 1300
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1000
Del.quantity cm3/ : 38.0...39.5
1000 s: (37.0...40.5)
Spread cm3 : 2.50
1000 s: (3.)
Speed rpm : 1300
Del.quantity cm3/ : 35.0...37.0
1000 s: (34.0...38.0)
Spread cm3 : 2.50
1000 s: (3.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1520...1530

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80

Del.quantity cm3/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

Remarks:

:
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H
Edition : 17.02.89
Replaces : 15.11.88
Test oil : ISO-4113

Combination no. : 0 400 075 948

Injection pump
Pump designation : PES5M55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF350/2300M71-1
Governor no. : 0 420 021 118

Customer-spec. information
Customer : DB

Engine : OM602-Abgasl.

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,2...9,6

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

-Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^\circ$
($16.2...16.8^\circ$) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At $n = 1000$ min. -1 ,
 $I = 2.5$ A, difference in delivery referenced to full-load
delivery ($7.8...9.8$) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H1
Edition : 17.02.89
Replaces : 16.06.88
Test oil : ISO-4113

Combination no. : 0 400 075 949

Injection pump
Pump designation : PES5M55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF350/2300M56-7
Governor no. : 0 420 021 119

Customer-spec. information
Customer : DB

Engine : OM602-Abgasl.

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,2...9,6

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s : (52.0...0.0)
Rack travel in mm : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed          rpm  : 2500
Rack travel in mm : 9.20...9.60
Del.quantity cm3/  : 22.0...26.0
                1000 s: (21.0...27.0)
Spread         cm3  : 2.50
                1000 s: (3.00)
```

LOW IDLE

```
Speed          rpm      : 350
Rack travel    in mm    : 6.40...6.60
Del.quantity   cm3/     : 5.0...6.0
               1000 s   : (4.5...9.0)
Spread         cm3       : 1.00
               1000 s   : (1.50)
```

SETTING PNEUMATIC FAST IDLE (ELA)

```
Speed      rpm      : 400
Rack travel in mm : (6,7...8,1)
Del.quantity cm3/  : -
            1000 s : (5,0...13,0)
Vacuum      hPa     : 400
```

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^\circ$
($16.2...16.8^\circ$) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H2
Edition : 17.02.89
Replaces : 16.06.88
Test oil : ISO-4113

Combination no. : 0 400 075 950

Injection pump
Pump designation : PES5M55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF340/2300M60-22
Governor no. : 0 420 021 120

Customer-spec. information
Customer : DB

Engine : OM602-Abgasl.

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,20...9,60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s : (52.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm : 2500
Rack travel in mm : 9.20...9.60
Del.quantity   cm3/ : 22.0...26.0
                1000 s: (21.0...27.0)
Spread         cm3 : 2.50
                1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 315
Rack travel in mm : 6.40...6.60
Del.quantity cm3/   : 5.0...6.0
           1000 s : (4.5...9.0)
Spread     cm3      : 1.00
           1000 s : (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed      rpm      : 340
Rack travel in mm : (13,0...14,4)
Del.quantity cm3/  : -
              1000 s: (29,0...37,0)
```

```
Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current
short-duration A : 3,0
```

Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°; max.
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^\circ$
($16.2...16.8^\circ$) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H3
Edition : 17.02.89
Replaces : 15.11.88
Test oil : ISO-4113

Combination no. : 0 400 075 951

Injection pump
Pump designation : PES5M55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF340/2300M60-20
Governor no. : 0 420 021 111

Customer-spec. information
Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 7.0...7.2

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,00...9,40

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
 $KDEP\ 1077 = 19.3^\circ \dots 19.7^\circ$
($19.2^\circ \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H4
Edition : 17.02.89
Replaces : 15.11.88
Test oil : ISO-4113

Combination no. : 0 400 075 952

Injection pump
Pump designation : PES5M55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF350/2300M56-5
Governor no. : 0 420 021 112

Customer-spec. information
Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10 -
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

N21

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.2

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,00...9,40

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350
Rack travel in mm : 7.1

Testing:

Speed rpm : 220
Minimum rack travel : 10.00
Speed rpm : 350
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.50
Speed rpm : 670...770
Speed rpm : 1000
Maximum rack travel : 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.90...6.10
: (5.80...6.20)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in mm : 12.80...12.90
2nd speed rpm : 1800
Rack travel in mm : 12.20...12.40
3rd speed rpm : 2200
Rack travel in mm : 11.80...12.00

Aneroid/Altitude Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in mm : 0.50...0.70
2nd pressure hPa : 750
Rack travel in mm : 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h : 1100
Speed rpm : 1800
Del. quantity cm³/ : 34.0...35.5
1000 s : (33.0...36.5)
Spread cm³ : 2.50
1000 s : (3.)
Aneroid pressure h : 1100
Speed rpm : 2200
Del. quantity cm³/ : 33.5...35.5
1000 s : (32.5...36.5)
Spread cm³ : 2.50
1000 s : (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 52.0...0.0
1000 s : (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h : 1100
Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del. quantity cm³/ : 22.0...26.0
1000 s : (21.0...27.0)
Spread cm³ : 2.50
1000 s : (3.00)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...7.20
Del. quantity cm³/ : 5.0...6.0
1000 s : (4.5...9.0)
Spread cm³ : 1.00
1000 s : (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400
Rack travel in mm : (7,1...8,7)
Del. quantity cm³/ : -
1000 s : (5,0...13,0)
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H5
Edition : 17.02.89
Replaces : 15.11.88
Test oil : ISO-4113

Combination no. : 0 400 075 953

Injection pump
Pump designation : PES5M55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF350/2300M71
Governor no. : 0 420 021 113

Customer-spec. information
Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

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pressure, bar : 172...175

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x Wall thickness
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Test pressure, bar: 30...32

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: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,00...9,40

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s : (52.0...0.0)
Rack travel in mm : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm3/ : 22.0...26.0
                1000 s: (21.0...27.0)
Spread         cm3 : 2.50
                1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 350
Rack travel in mm : 7.00...7.20
Del.quantity cm3/  : 5.0...6.0
            1000 s : (4.5...9.0)
Spread     cm3      : 1.00
            1000 s : (1.50)
```

SETTING PNUEUMATIC FAST IDLE (ELA)

```
Speed      rpm      : 400
Rack travel in mm : (7,1...8,7)
Del.quantity cm3/  : -
            1000 s : (5,0...13,0)
Vacuum      hPa     : 400
```

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
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CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
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displacement of cam